

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF PUERTO RICO

In re:

THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO

As a representative of

THE COMMONWEALTH OF PUERTO RICO, et al.

Debtor

In re:

THE FINANCIAL OVERSIGHT AND MANAGEMENT BOARD FOR PUERTO RICO

As a representative of

THE EMPLOYEES RETIREMENT SYSTEM OF THE
GOVERNMENT OF PUERTO RICO,

Debtor.

PROMESA
Title III

Case No. 3:17-bk-03283 (LTS)

PROMESA
Title III

Case No. 3:17-cv-01685-JTS

Case No. 3:17-bk-03566 (LTS)

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EXPERT REPORT OF FATEN SABRY, PH.D.

NERA ECONOMIC CONSULTING, INC.

May 30, 2019

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I. QUALIFICATIONS AND BACKGROUND

A. Qualifications

1. I am a Managing Director in the Securities and Finance Practice at NERA and Chair of the Bankruptcy Practice, as well as Chair of the Securities and Finance Practice. I have over twenty years of experience in economic and financial consulting in the valuation of fixed income securities, derivatives, illiquid assets, businesses and litigation settlements. I have consulted in disputes involving fraudulent conveyance, leveraged buyouts, distressed exchanges, solvency, and hedging strategies, among other issues. I have testified as an expert in State and Federal Courts.

2. Examples of my securities and bankruptcy work include: the valuation of illiquid securities in the bankruptcy proceedings of Novation Companies, Inc., the analysis of causation and damages related to structured notes, the valuation and damages analysis involving structured finance and fixed income securities, including mortgage-backed securities (“MBS”) and collateralized debt obligations (“CDOs”), the analysis of the capital market reactions using credit default swaps to leveraged buyout transactions and the foreseeability of bankruptcy during the credit crisis. I also authored a study on the impact of regulatory changes on municipal securities and have extensive experience in estimating contingent liabilities for reserves purposes.

3. I received my Ph.D. in Business from Stanford Business School and was awarded the J.M. Olin Graduate Fellowship, the Graduate School of Business Fellowship, and a Ford Foundation Fellowship. I received my BA, magna cum laude, and MA in economics from the American University in Cairo. My research has been published in the Journal of Structured Finance, Journal of Investment Compliance, Journal of Alternative Investments, Business Economics, International Trade Journal, and others. I have been accredited as a professional statistician by the American Statistics Association and am a member of the advisory board of VALCON. I am also a member of the American Bankruptcy Institute and the American Finance Association.

4. My curriculum vitae is attached as Exhibit 1.

Exhibit 1. *Expert CV – See Attached*

5. The materials considered in the preparation of this report are listed in Exhibit 2.

Exhibit 2. *Materials Considered – See Attached*

6. NERA is being compensated for its time at standard billing rates and its out-of-pocket expenses at cost. My current hourly rate is \$950. The rates charged for other NERA personnel working at my direction on this matter range from \$250 to \$665 per hour. NERA's compensation is not contingent upon the nature of my findings or on the outcome of this matter.

B. Assignment

7. I have been retained by Counsel for Andalusian Global Designated Activity Company, Glendon Opportunities Fund, L.P., Mason Capital Master Fund, LP, Oaktree Opportunities Fund IX, L.P., Oaktree Opportunities Fund IX (Parallel 2), L.P., Ocher Rose, L.L.C., and SV Credit, L.P. ("Movants") in the litigation of the *Motion of Certain Secured Creditors of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico for Relief from the Automatic Stay* to provide expert testimony at the hearing on their Motion for the Relief from the Automatic Stay.

C. Background

8. The Employees Retirement System of the Government of the Commonwealth of Puerto Rico (the "ERS" or the "System") was created by Act No. 447 of May 15, 1951 ("Act 447").¹ ERS provided pensions and other benefits to retired employees of the Commonwealth of Puerto Rico and certain of its municipalities and public corporations.² As of June 2018, ERS had 233,048 members, including 119,048 retirees, disabled members, and beneficiaries receiving

¹ Employees Retirement System of the Government of the Commonwealth of Puerto Rico, Act No. 447 of May 15, 1951, as amended ("Act 447 as amended"), p. 3.

² Act 447 as amended, pp. 3, 5, 6.

benefits, and 114,000 active employees, according to the ERS Annual Financial Information and Operating Data Report for fiscal year 2018.³

9. Act 447 as amended requires the employers, which include the Government of Puerto Rico (the “Commonwealth”) and public corporations and municipalities (together the “non-Commonwealth employers”) to contribute to the ERS.⁴ Employee contributions were also made to the ERS.⁵ The laws governing the ERS were amended over time and those amendments affect the contributions from the employers and employees as well as the benefits that different groups of beneficiaries are entitled to. For example, the date when an individual became a participant in the pension system, among other factors, affects the benefits to which he or she is entitled.⁶

10. I understand that employees who joined the ERS before January 1, 2000 participated in a “defined benefit” program – a retirement benefit that is either an exact dollar amount or a calculated benefit based on a formula that considers factors such as salary and years of service.⁷ Under Act 447 of May 15, 1951, the employers were required to contribute a minimum of 4.5 percent of their payroll to ERS.⁸ The minimum contribution percentage for employers was increased to 7 percent as of July 1979 and 8 percent as of July 1982.⁹ I refer to members who joined the ERS system between 1951 and prior to April 1, 1990 as “Act 447

³ Puerto Rico Fiscal Agency and Financial Advisory Authority, Annual Financial Information and Operating Data Report, for fiscal year 2018, May 1, 2019.

⁴ Act 447, as amended, pp. 5, 31.

⁵ Act 447, as amended, p. 30.

⁶ *See, e.g.*, Act 447, as amended, p. 4.

⁷ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210. *See also*, US Department of Labor, “Types of Retirement Plans,” available at <https://www.dol.gov/general/topic/retirement/typesofplans>.

⁸ Act 116 of July 6, 2011 (“Act 116-2011”), p. 10.

⁹ Act 116-2011, p. 10.

members.” According to the 2016 Financial Information and Operating Data Report by the Commonwealth, the Act 447 members “were entitled to the highest benefits structure.”¹⁰

11. Act 447 was amended by Act 1 of 1990 (“Act 1”) to provide lower benefit levels and longer vesting periods for employees who entered the System on or after April 1, 1990.¹¹ Act 1 also increased the minimum required contribution percentage for employers to 9.275 percent and increased the contribution percentage for employees to 8.275 percent.¹² I refer to members who joined the ERS system between April 1, 1990 and prior to 2000 as “Act 1 members.”

12. In 1999, Act 447 was amended again by Act 305 of September 24, 1999 (“Act 305-1999”) to “close the defined benefit to new participants and, prospectively, establish a new benefit structure similar to a cash balance plan” (“System 2000”).¹³ Under System 2000, employees who entered the System on or after January 1, 2000 were required to contribute a minimum of 8.275 percent of their salary to the ERS and the “benefits to be provided to each participant upon separation from the service, whether by retirement or otherwise, shall depend on the total accrued in the savings account.”¹⁴ I refer to participants who entered the ERS on or after January 1, 2000 as “System 2000 members.”¹⁵ System 2000 members could elect to receive their benefits in the form of a lump-sum payment or an annuity prior to the amendments made by Act 3-2013, but were only entitled to an annuity thereafter.¹⁶

¹⁰ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

¹¹ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

¹² Puerto Rico 1990 Session Laws, 11th Legislature, 3rd Regular Session, Act No. 1, February 16, 1990, (“Act 1”), pp. 2, 8. *See also*, Act 116-2011, p. 10.

¹³ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

¹⁴ Act 305 of September 24, 1999 (“Act 305-1999”), pp. 20-23. *See also*, Act 447 as amended, pp. 34, 35.

¹⁵ I understand that employees who were part of Act 447 and Act 1 defined benefit system could elect to waive their benefits under the defined benefit system and participate in System 2000. *See* Act 305-1999, p. 21.

¹⁶ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, pp. 210, 211. *See also*, Act 305-1999, pp. 29, 30.

13. I understand that, under System 2000, employers were still required to make contributions at the rate of 9.275 percent, but this did not affect the benefits to which System 2000 members were entitled.¹⁷ Instead, those employer contributions were used to increase the System's assets and reduce actuarial deficits.¹⁸ In addition, "there are no segregated accounts for System 2000 Participants" and instead, contributions from System 2000 members were "pooled and invested by the ERS together with the assets corresponding to the defined benefit structure," thus benefit payments for Act 447, Act 1, and System 2000 members "are payable from the same pool of assets of the ERS."¹⁹

14. In 2008, the ERS issued three series of bonds ("ERS Bonds") with an aggregate principal amount at issuance of \$2.95 billion. Series A bonds, with an initial principal amount of \$1.59 billion were issued in January 2008; Series B bonds, with an initial principal amount of \$1.06 billion were issued in May 2008; and Series C bonds, with an initial principal amount of \$300 million, were issued in June 2008.²⁰ The bonds are secured, or collateralized, by Pledged Property, including employer contributions to the ERS among other things; and they are non-recourse to other assets of the ERS.²¹

¹⁷ See, Act 305-1999, p. 24. See also, Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

¹⁸ See, Act 305-1999, p. 24.

¹⁹ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

²⁰ Official Statement of Senior Pension Funding Bonds, Series A, Official Statement of Senior Pension Funding Bonds, Series B, Official Statement of Senior Pension Funding Bonds, Series C.

²¹ See, e.g., Official Statement of Senior Pension Funding Bonds, Series A, p. 2; Senior Pension Funding Bonds Series A, Bond Resolution, pp. 2, B-11, B-12, B-14. Specifically, section 201 of the Bond Resolution states, "The Bonds shall be special obligations of the System payable solely from the Pledged Property without recourse against other assets of the System." Exhibit B of the Bond Resolution defines "Pledged Property" as, "the following, collectively (but without duplication), except as otherwise may be provided with respect to a Series of Bonds by the Supplemental Resolution authorizing such Bonds: 1. All Revenues. 2. All right, title and interest of the System in and to Revenues, and all rights to receive the same. 3. The Funds, Accounts, and Subaccounts held by the Fiscal Agent, and moneys and securities and, in the case of the Debt Service Reserve Account, Reserve Account Cash Equivalents, from time to time held by the Fiscal Agent under the terms of this Resolution, subject to the application thereof as provided in this Resolution and to the provisions of Sections 1301 and 1303. 4. Any and all other rights and personal property of every kind and nature from time to time hereafter pledged and assigned by the System to the Fiscal Agent as and for additional security for the Bonds and Parity Obligations. 5. Any and all cash and non-cash proceeds, products, offspring, rents and profits from any of the Pledged Property mentioned described in paragraphs (1) through (4) above, including, without limitation, those from the sale,

15. According to the ERS Bond Resolution, the employer contributions received by the ERS were deposited with a fiscal agent, which was the Bank of New York.²² The fiscal agent then paid the interest and principal payments on the bonds and operating expenses before releasing the remaining employer contributions to ERS.²³ I understand that upon an event of default such as a non-payment, holders of the ERS Bonds are not entitled to declare all amounts immediately due and payable; yet the fiscal agent is entitled to enforce any unpaid payments including interest accrued on the overdue payments at the rates of interest specified in each bond document.²⁴ The ERS Bonds are discussed in more detail in Section III, below.

16. Act 116-2011 as of July 6, 2011 further increased the employer contribution rate for Act 447, Act 1, and System 2000 members from 9.275 percent to 10.275 percent for fiscal year 2012, then a planned additional 1 percent annually for the next four years, and then a planned additional 1.25 percent annually for the five years thereafter.²⁵

17. In April 2013, the Commonwealth enacted additional reforms with Act 3-2013 (“Act 3-2013”). Under Act 3-2013, Act 447 and Act 1 active employees were transferred to a “hybrid” program under which their accrued benefits as of June 30, 2013 were frozen, or stopped

exchange, transfer, collection, loss, damage, disposition, substitution or replacement of any of the foregoing.” The ERS Bond Resolution also defines “Revenues” as, “the following, collectively (but without duplication), except as otherwise may be provided with respect to a Series of Bonds by the Supplemental Resolution authorizing such Bonds: 1. All Employers’ Contributions received by the System or the Fiscal Agent. 2. With respect to any particular Bonds, the proceeds of any draw on or payment under any Credit Facility which is intended for the payment of such Bonds, but only for purposes of such payment and not for other purposes of this Resolution. 3. Net amounts received by the System pursuant to a Qualified Hedge. 4. Income and interest earned and gains realized in excess of losses suffered by any Fund, Account, or Subaccount held by the Fiscal Agent under the terms of this Resolution, subject to the provisions of Sections 1301 and 1303. 5. Any other revenues, fees, charges, surcharges, rents, proceeds or other income and receipts received by or on behalf of the System or by the Fiscal Agent, lawfully available for the purposes of this Resolution and deposited by or on behalf of the System or by the Fiscal Agent in any Fund, Account, or Subaccount held by the Fiscal Agent under the terms of this Resolution, subject to the provisions of Sections 1301 and 1303.”

²² Senior Pension Funding Bonds Series A, Bond Resolution, pp. 15, B-7.

²³ Senior Pension Funding Bonds Series A, Bond Resolution, Article V, pp. 19, 26. *See also*, e.g., Official Statement of Senior Pension Funding Bonds, Series A, pp. 4, 39-40.

²⁴ *See*, e.g., “Official Statement of Senior Pension Funding Bonds, Series A,” pp. 26, 33.

²⁵ Act 116-2011, pp. 15, 16.

accruing, and their ongoing contributions would later be used to pay an annuity.²⁶ In addition, Act 3-2013 generally increased the retirement age for Act 447 members from 55-58 to 59-61, for System 2000 members from 60 to 61-65, and for most new employees joining the system after June 30, 2013 to 67; it increased the employee contribution rate from 8.275 percent to 10 percent; it required that System 2000 payouts be an annuity (no longer allowing for lump-sum payouts), and it reduced or modified certain other benefits.²⁷

18. Later that year in June 2013, Act 32-2013 also created an additional employer contribution known as the Additional Uniform Contribution (“AUC”) to help “make up the System’s cash flow deficit.”²⁸ The AUC was set at \$140 million, and later revised to \$120 million, for fiscal year 2014, and for subsequent years its amount would be determined by an actuary “as necessary to prevent the value of the projected gross assets of the System from falling below one billion dollars.”²⁹ The AUC for each employer would correspond to that employer’s “percentage of the total employer contributions.”³⁰ However, as discussed further in Section III below, the AUC was largely unpaid and was eventually removed in June 2017.³¹

19. The ERS issued annual financial statements and actuarial reports. These financial reports described the annual change in the value of the assets and liabilities of the ERS. The actuarial reports, recently prepared by actuarial services firm Milliman, also estimated the present value of the pension obligations of the system.³² These reports documented that the ERS

²⁶ Act 3-2013, pp. 27, 32, 33.

²⁷ Act 3-2013, pp. 20, 28, 34. *See also*, Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 211; and Puerto Rico Government Employees Retirement System, June 30, 2013 Actuarial Valuation Report, pp. 52-54.

²⁸ Act 32-2013, p. 6.

²⁹ Act 32-2013, p. 7. *See also*, Act 244-2014, p. 1.

³⁰ Act 32-2013, p. 6.

³¹ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 211. *See also*, Commonwealth of Puerto Rico, Financial Information and Operating Data Report for fiscal year 2016, p. 13. *See also*, Joint Resolution 188, p. 4.

³² Milliman is an actuarial services firm. It provided actuarial services to the ERS and continues to provide actuarial estimates to the Government of Puerto Rico. These actuarial estimates were used in annual actuarial reports that estimated ERS assets and its present value of liabilities. I understand that Milliman’s estimates are currently used

was underfunded; the gross assets of the system were being depleted, and the net assets were exhausted as of fiscal year 2015.³³ For example, by fiscal year 2015, the actuarial report stated, “[Puerto Rico Government Employees Retirement System] net assets have been exhausted in the 2014-2015 fiscal year. If the increasing Law 116 employer contributions, the Supplemental Contribution under Act 3, and the Additional Uniform Contribution under Act 32 (as amended by Act 244) are not paid in full on an annual basis, PRGERS will continue being rapidly disfunded and gross assets will be exhausted.”³⁴ The actuarial report for fiscal year 2017 later stated, “PRGERS gross assets as of June 30, 2017 are less than one year of expected benefit payments.”³⁵ The conclusions of these reports are further discussed in Section III, below.

20. On June 30, 2016, the U.S Congress enacted the Puerto Rico Oversight, Management, and Economic Stability Act (“PROMESA”) that established an Oversight Board to “assist the Government of Puerto Rico, including instrumentalities, in managing its public finances, and for other purpose.”³⁶

21. On November 23, 2016, the Financial Oversight and Management Board for Puerto Rico (“FOMB”), which was created under PROMESA, sent a letter to Governor Garcia Padilla regarding their assessment of the Government of Puerto Rico’s fiscal plan. In this letter, FOMB requested that the fiscal plan be amended to reflect projected “PayGo funding for pension benefits and segregation of current employee contributions beginning no later than 2018.”³⁷ The Commonwealth’s Financial Information and Operating Data Report dated December 18, 2016 also commented, “[t]he Retirement Systems are severely underfunded. [...] The ERS projects

by Puerto Rico and the FOMB for budgeting and planning purposes, including estimates in Puerto Rico’s fiscal plans. *See, e.g.,* Financial Oversight and Management Board for Puerto Rico, 2019 Fiscal Plan for Puerto Rico, May 9, 2019, pp. 114, 116.

³³ Puerto Rico Government Employees Retirement System, June 30, 2015 Actuarial Valuation Report, p. 12.

³⁴ Puerto Rico Government Employees Retirement System, June 30, 2015 Actuarial Valuation Report, p. 12.

³⁵ Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report.

³⁶ H. R. 5278, in the Senate of the United States, June 13, 2016, p. 1.

³⁷ Financial Oversight and Management Board for Puerto Rico, letter to Honorable Alejandro Garcia Padilla, November 23, 2016, p. 3.

that it will deplete its liquid assets (which amounted to \$655.3 million as of November 14, 2016) by the end of the fourth quarter of the current fiscal year or during the first half of fiscal year 2018 (July to December 2017) [...] At that point (assuming no liquidation of illiquid assets, which totaled \$616.0 million as of November 14, 2016, and no additional annual contributions), the ERS would be operating on a ‘pay-as-you-go’ basis.”³⁸ The report went on to explain the pay-as-you-go situation as “the ERS would be unable to pay retirement benefits that exceed the actual employer and employee contributions (net of administrative and other expenses), unless the Commonwealth and other participating employers provide additional funding on a timely basis to meet such retirement benefits in full.”³⁹

22. On February 28, 2017, the Commonwealth introduced a revised version of the fiscal plan that proposed a “pay-as-you-go model to cover remaining defined benefit obligations.”⁴⁰ On March 13, the FOMB certified a revised fiscal plan that incorporated the “pay-as-you-go” model subject to certain changes.⁴¹ Both fiscal plans also proposed to put new employee contributions into a segregated defined contribution system.⁴²

23. On May 3, 2017, the Oversight Board filed a petition for bankruptcy relief for the Commonwealth under Title III of PROMESA. On May 21, 2017, the Oversight Board filed a Title III petition for ERS.⁴³

³⁸ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 17.

³⁹ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 17.

⁴⁰ Puerto Rico Fiscal Agency and Financial Advisory Authority, “Fiscal Plan for Puerto Rico,” February 28, 2017, p. 62.

⁴¹ Puerto Rico Fiscal Agency and Financial Advisory Authority, “Fiscal Plan for Puerto Rico,” March 13, 2017, p. 21. *See also*, Financial Oversight and Management Board for Puerto Rico, Board Resolution Adopted on March 13, 2017 (Fiscal Plan Certification).

⁴² Puerto Rico Fiscal Agency and Financial Advisory Authority, “Fiscal Plan for Puerto Rico,” February 28, 2017, p. 62. *See also*, Puerto Rico Fiscal Agency and Financial Advisory Authority, “Fiscal Plan for Puerto Rico,” March 13, 2017, p. 21.

⁴³ Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Basic Financial Statements and Required Supplementary Information, June 30, 2016, p. 8.

24. On June 23, 2017, the Puerto Rico Legislative Assembly adopted Joint Resolution 188, which ordered ERS and the Judiciary and Teachers' Retirement Systems "to sell their assets and to transfer the net cash proceeds, in addition to any available funds, into the Treasury Secretary's account."⁴⁴ Joint Resolution 188 also eliminated the "employer contributions by the Central Government, Public Corporations, and Municipalities" and the AUC to ERS effective July 1, 2017.⁴⁵ According to this resolution, the three retirement systems including ERS would continue to sell their assets and transfer the proceeds to the General Fund while the General Fund would, "through the pay-as-you-go system, assume any payments that the three Retirement Systems cannot make."⁴⁶

25. Subsequently on August 23, 2017, the Commonwealth enacted Act No. 106 of 2017 ("Act 106"). Act 106 provided that payments on all accumulated pensions as of July 1, 2017 would be made under a "pay as you go" (or "PayGo") system. That system would use funds from charges called PayGo fees that are imposed upon employers, the proceeds from the liquidation of assets of the ERS and other retirement systems, and other sources such as allocations to cover shortfalls by the Puerto Rican Government.⁴⁷ Act 106 provided that the amount of PayGo fees "shall be equal to the amount actually paid to Pensioners and Beneficiaries from each covered entity" and is determined by the Puerto Rico Fiscal Agency and Financial Advisory Authority ("AAFAF") and collected by the Treasury.⁴⁸ I understand that ERS members as of June 30, 2017 do not accrue additional benefits under the legacy retirement

⁴⁴ Joint Resolution 188, p. 3. The 2016 ERS financial statement stated, "On July 20, 2017, the System sold investments in the total aggregate amount of approximately \$297 million." *See* Employees' Retirement System of the Government of the Commonwealth of Puerto Rico, Basic Financial Statements and Required Supplementary Information, June 30, 2016, p. 64.

⁴⁵ Joint Resolution 188, pp. 3, 4.

⁴⁶ Joint Resolution 188, pp. 3, 4.

⁴⁷ Act 106, p. 17.

⁴⁸ Act 106, p. 17. *See also*, ERS-CW_LS0000388, p. 3.

systems that are funded by PayGo.⁴⁹ The General Fund guarantees the payments of pension benefits “regardless of the payment of the ‘Pay-Go’ Fee by the employer.”⁵⁰

26. In addition, Act 106 also established a new defined contribution plan for all active employees as of July 1, 2017 and for those who start working on or after that date (the “New Defined Contribution Plan”).⁵¹ Under this New Defined Contribution Plan, “new employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be [ERS] members.”⁵² Contributions made by each employee, which is at least 8.5 percent of their monthly remuneration, would be “credited to the individual accounts” and the pension benefit provided to each participant would depend on his or her contributions and the rate of return on their investment.⁵³

II. SUMMARY OF FINDINGS

27. I was asked by Counsel for the Movants to address the following questions:

- a. Evaluate the financial position of ERS and the PayGo system as related to the servicing of the ERS Bonds;
- b. Determine whether the sources of funding for the pension system remained similar before and after the 2017 legislation that changed the ERS pension system to pay-as-you-go;
- c. Assuming that future PayGo fees are a source of repayment to the bondholders, evaluate the risk of repayment arising from the decline in projected payments for benefits accrued under

⁴⁹ The 2017 ERS actuarial report explains, “[b]ecause of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members.” See, Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report, p. 7.

⁵⁰ Act 106, p. 17.

⁵¹ Act 106, pp. 22-24.

⁵² See, Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report, p. 6.

⁵³ Act 106, pp. 22-24.

the ERS which are funded by the PayGo system (“ERS Benefit Payments”);

- d. Assuming that future PayGo fees are a source of repayment to the bondholders, evaluate additional risks of repayment arising from the financial health of the Commonwealth, municipalities, and public corporations and the effect of legislative changes.

28. My findings can be summarized as follows:

- a. The financial position of ERS deteriorated over time. ERS issued almost \$3 billion of bonds to address its underfunding problems. Employer contributions, channeled through a fiscal agent, were historically used to service the debt. *See* Section III below.
 - i. From 2008 through 2017, the additions in the ERS system including employer and employee contributions were insufficient to cover deductions for every year except 2011 according to ERS financial and actuarial reports.
 - ii. The ERS system was underfunded. Beginning in fiscal year 2015 and thereafter, the net assets of ERS were negative.
 - iii. ERS issued three series of bonds with an initial aggregate principal value of \$2.95 billion to address its underfunding problems. According to the ERS Bond Resolution, the ERS Bonds would be paid from the Pledged Property, which includes the employer contribution component of the ERS funding system via the use of a fiscal agent. The offering documents included projections by a third-party consultant that compared the bond service payments to the estimated annual future employer contributions.

- iv. A fiscal agent was selected to manage the collateral of the bonds. According to the ERS Bond Resolution, cash flow streams from employer contributions would be held in accounts at the fiscal agent created by the ERS Bond Resolution. The ERS would transfer employer contributions to the fiscal agent and the fiscal agent would then distribute the funds to pay for debt service, operating expenses and reserves.
- b. In 2017, legislation changed the pension system to PayGo. However, the sources of the funding by employer types (the Commonwealth, municipalities, and public corporations) remained largely unchanged and the percentage of funding from the three employer types remained similar before and after the switch to PayGo in 2017. *See* Section IV below.
- c. Empirical evidence demonstrates that PayGo fees are a time-limited source of funds for the repayment to the holders of the ERS Bonds. *See* Section V below.
 - i. PayGo fees are not paid into, nor accumulated in, a fund that grows over time. Instead, they are spent to pay benefits for current beneficiaries after they are received.
 - ii. Principal and interest payments on the ERS Bonds will continue until 2058. But starting on July 1, 2017, new employees will not be ERS members and no future benefits will be earned by ERS members. Even if employers pay their PayGo invoices, the projected ERS Benefit Payments are expected to decline over the remaining life of the bonds by about 72 percent according to my analysis of Milliman's projections.

- d. PayGo fees are subject to risks associated with the financial health of the Commonwealth, municipalities, and public corporations. *See* Section VI below.
- i. As described by the May 2019 certified fiscal plan, the government of Puerto Rico is in financial distress and as a result the primary source of the PayGo fees could be at risk. The May 2019 certified fiscal plan also calls for decreasing pension payments by 10 percent (and thus PayGo fees) and proposes to reduce aid to municipalities which may reduce their ability to remit PayGo fees.
- ii. Some municipalities and public corporations already have been and remain delinquent in remitting their PayGo fees. For PayGo fees invoiced in fiscal year 2018, the municipalities failed to pay 38.2 percent of the invoiced PayGo fees and the public corporations failed to pay 19.3 percent of the invoiced PayGo fees as of April 2019.
- iii. An additional source of risk to the PayGo fees from the municipalities is the risk from recent legislation that excuses municipalities from having to remit PayGo fees.

III. THE FINANCIAL POSITION OF THE ERS SYSTEM OVER TIME

A. ERS Additions and Deductions

29. The ERS annual financial statements reported its “additions” and “deductions” as well as its net position at the end of each fiscal year. The additions include employer contributions, member contributions, net investment income, and other income; and deductions include benefits paid to participants, refunds of contributions, interest on bonds, general and

administrative expense, and other expenses.⁵⁴ Exhibit 3, below, shows the additions and deductions for the ERS from fiscal years 2008 through 2017. The additions were insufficient to cover deductions for every year except 2011.⁵⁵ For example, in fiscal year 2010, there were \$573.5 million in employer contributions and \$775.7 million in other additions, for a total of \$1,349.1 million of additions to the ERS.⁵⁶ These were more than offset by \$1,526.3 million in deductions.⁵⁷ The total ERS net assets were reduced from \$1.84 billion at the end of fiscal year 2009 to \$1.66 billion at the end of fiscal year 2010.⁵⁸

⁵⁴ See, for example, “Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico,” Basic Financial Statements and Required Supplementary Information, June 30, 2016.

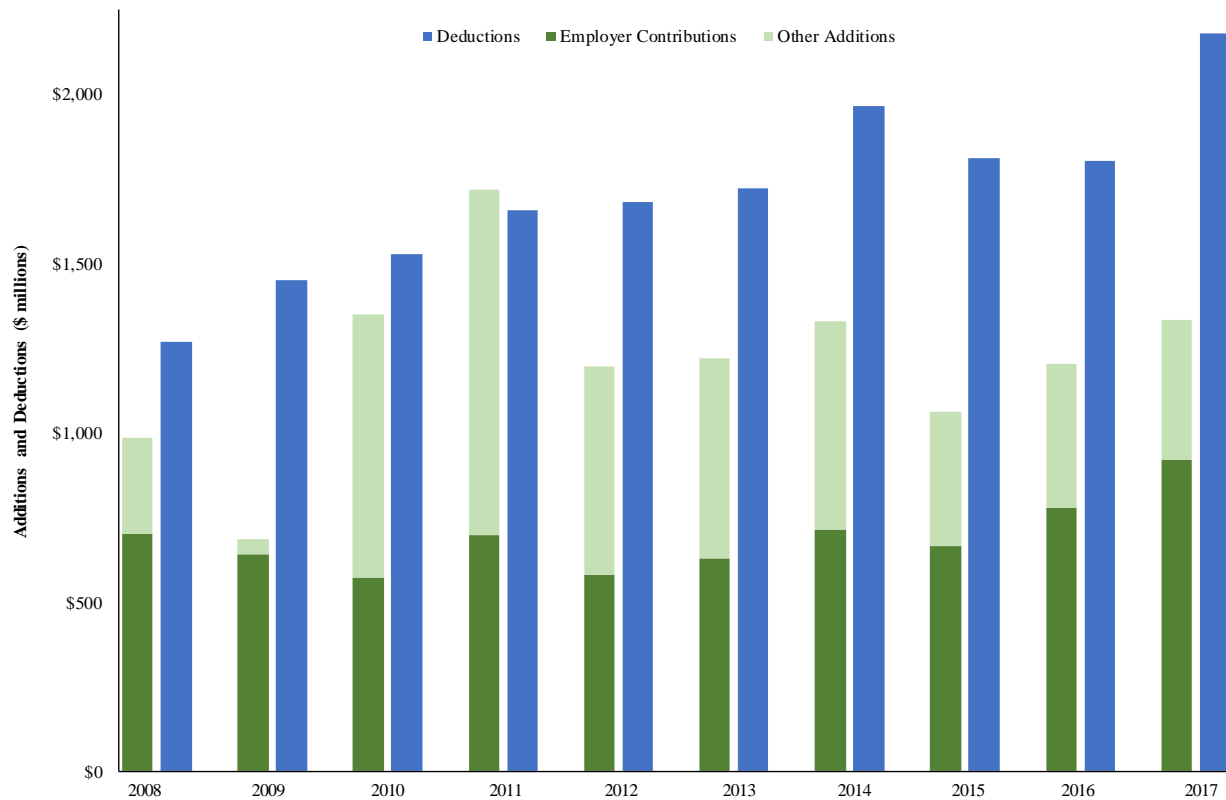
⁵⁵ Between 2008 and 2016, the addition and deduction amounts are from the ERS basic financial statements and required supplementary information, audited by Deloitte & Touche LLP and subsequently by KPMG LLP. Additions and deductions for fiscal year 2017 are from Milliman’s June 30, 2017 Actuarial Valuation Report, given that the ERS audited financial statement for fiscal year 2017 is not available.

⁵⁶ The employer contributions of \$573.5 million during fiscal year 2010 include basic benefits contributions, special laws contributions and early retirement contributions.

⁵⁷ “Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico,” Basic Financial Statements and Required Supplementary Information, June 30, 2010.

⁵⁸ “Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico,” Basic Financial Statements and Required Supplementary Information, June 30, 2009 and June 30, 2010.

Exhibit 3. *ERS Additions and Deductions for Fiscal Years 2008-2017*



Notes and Sources:

-Data are from financial statements and actuarial valuation reports of the Employees Retirement System.

30. As described above in Section I.C, following the passage of Act 32-2013, employers were assessed an additional amount, the AUC, which was designed to reduce the funding gap.⁵⁹ Employers were assessed a pro rata share of the AUC based on the proportion of their employer contributions. However, the Commonwealth of Puerto Rico, which paid the largest share of the employer contribution, ceased its AUC contributions to ERS in fiscal year 2016.⁶⁰

⁵⁹ Act 32-2013, p. 6.

⁶⁰ See, Employees Retirement System of the Government of the Commonwealth of Puerto Rico, Annual Financial Information, fiscal year 2016, April 25, 2017. "The only Commonwealth contributions realized by ERS since July 2016 are internal accounting adjustments from the Department of Treasury in the amount of \$18.5 million per month. The Commonwealth owes ERS more than \$411 million on account of Additional Uniform

31. ERS “Deductions” included payments of all retirement beneficiaries, including the recipients of defined benefits and the defined contribution benefits owed to retired System 2000 participants.⁶¹ For System 2000 participants, the benefits upon retirement were calculated based on the total employee contributions made over their career. The employees were allowed to select an investment option, and the value of their retirement benefit reflected this investment selection as if their contributions were actually invested in these options.⁶² However, the employee contributions were not segregated and saved for future retirees, but were instead commingled with all other ERS assets and used to pay current benefits for all beneficiaries.⁶³

B. The ERS Pension System Was Underfunded

32. A pension system’s funded ratio is the ratio of net assets to its estimated liabilities.⁶⁴ For Puerto Rico, a combination of low assets and high liabilities resulted in a low funded ratio. As of the end of each of the following fiscal years, the ERS funded ratio was approximately 15.8 percent in 1990, increased to approximately 24.6 percent in 2001, then declined to -3.5 percent in 2016. By way of comparison, the U.S. Government Accountability Office stated that a funded ratio of 80 percent was “generally viewed as acceptable to support future pension costs.”⁶⁵

Contribution (AUC) payments that ERS no longer receives.” *See also*, Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 211. “Due to the worsening fiscal crisis since the enactment of Act 3-2013, however, the Commonwealth and other participating employers have been unable to pay most of the ERS-AUC.”

⁶¹ *See*, for example, “Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico,” Basic Financial Statements and Required Supplementary Information, June 30, 2016, pp. 8, 26.

⁶² Act 447 as amended, pp. 34-37.

⁶³ Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 210.

⁶⁴ Board of Governors of the Federal Reserve System, “State and Local Government Pension Funding Ratios, 2002 – 2016,” available at: https://www.federalreserve.gov/releases/z1/dataviz/pension/funding_ratio/map/#year:2016. *See also*, Wang, Qiushi & Peng, Jun, “An Empirical Analysis of State and Local Public Pension Plan Funded Ratio Change, 2001-2009,” *The American Review of Public Administration*, January 1, 2016, Volume 46, Issue 1, pp. 75-91.

⁶⁵ United States Government Accountability Office, *State and Local Government Retiree Benefits: Current Status of Benefit Structures, Protections, and Fiscal Outlook for Funding Future Costs*, GAO-07-1156 (Washington, DC, September 2007), p. 30.

33. According to its 2015 financial statements, the ERS system, “since its inception, lacked proper planning. The levels of contributions were relatively low and still remain low in comparison to the level of benefits.”⁶⁶

34. The ERS system retained a third-party actuarial consultant, Milliman, to evaluate the expected future liabilities and assets of the system. Milliman’s findings were published in annual actuarial reports. The actuarial reports evaluate the present value of the liabilities of the ERS system as the present value of the benefits owed to beneficiaries (which include retirement benefits recipients, disability benefits recipients, vested withdrawal recipients, death benefit recipients, and non-vested withdrawal recipients) as well as other system-administered benefits such as additional minimum pension benefits and the Christmas bonuses.⁶⁷

35. According to Milliman’s actuarial reports of ERS, its estimations of future liabilities took into account certain ERS plan characteristics, including the service time of the plan members, compensation received during service tenure (including average compensation for Act 447 members), the accumulated beneficiary contributions through 2013, the cost-of-living adjustment for pension benefits, and other factors.⁶⁸ The estimate of the future pension liability also depends on the analysis of future employment history and the health and mortality for plan beneficiaries.⁶⁹ With these inputs and assumptions, Milliman estimated the annual cost of providing benefits to current and future retirees. This projected stream of benefits was then discounted to the present using an appropriate discount rate.

⁶⁶ “Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico,” Basic Financial Statements and Required Supplementary Information, June 30, 2015, p. 13.

⁶⁷ “Puerto Rico Government Employees Retirement System,” Milliman, June 30, 2017 Actuarial Valuation Report, p. 3.

⁶⁸ “Puerto Rico Government Employees Retirement System,” Milliman, June 30, 2017 Actuarial Valuation Report, pp. 29-46.

⁶⁹ “Puerto Rico Government Employees Retirement System,” Milliman, June 30, 2017 Actuarial Valuation Report, pp. 47-55. I only have access to the actuarial reports but not the backup files and programs. I reserve the right to update my analysis if I receive additional information about the assumptions.

36. As shown in Exhibit 4, below, the ERS total pension liability increased over time.⁷⁰ As of the end of each of the following fiscal years, the pension liability was approximately \$4.3 billion in 1990, approximately \$9.5 billion in 2000, approximately \$16.8 billion in 2007 (the year before the ERS Bonds were issued), \$23.7 billion in 2013, approximately \$36.4 billion in 2016, and approximately \$30.1 billion in 2017.

37. According to the annual actuarial reports from 1990 to 2017, the ERS assets did not increase at the same pace as its liabilities, and eventually decreased. Exhibit 4 illustrates the net assets (which are calculated in the actuarial reports as the market value of ERS assets minus its non-pension liabilities including bonds payable, securities lending cash collateral, and other liabilities), pension liability, and funded ratio of the Employees Retirement System.⁷¹ The grey bars illustrate the net assets and the orange bars show the total estimated actuarial pension liability of the ERS system.⁷² The blue line is the funded ratio, calculated as the net assets divided by the total pension liability. The funded ratio has been below 25 percent since the 1990s, and has decreased from 24.6 percent at the end of fiscal year 2001 to -7.0 percent at the end of fiscal year 2017, indicating that the system's financial position has worsened over time. As stated in Kobre & Kim's investigative report on Puerto Rico's financial problems, "The amount of its unfunded liabilities has always been a problem for ERS."⁷³

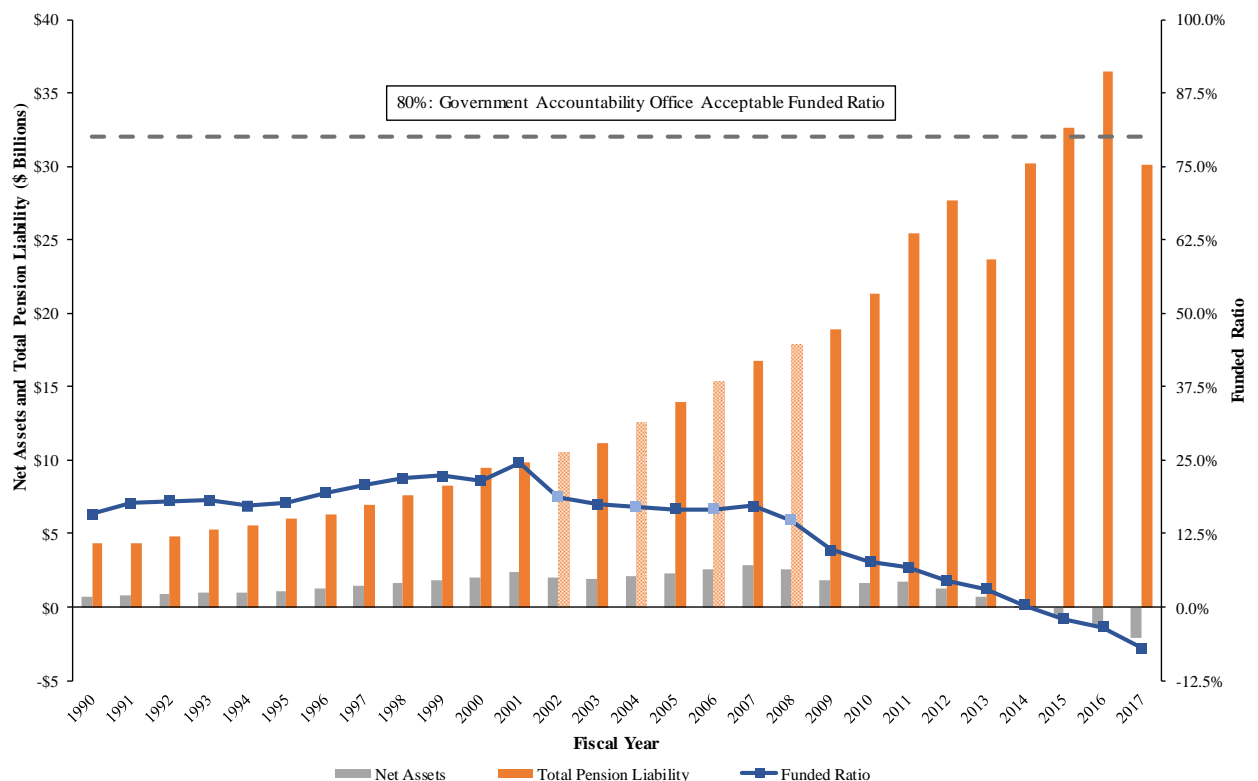
⁷⁰ Actuarial liability is the net present value of the pension system's future obligations which are the projected future pension benefit payments. *See*, "Final Investigative Report." Kobre & Kim LLP, August 20, 2018, pp. 200, 201.

⁷¹ The information was obtained from financial statements and actuarial valuation reports for Employees' Retirement System of Puerto Rico from 1990 to 2017. For certain years when the financial reports were not available, the pension liability was estimated as the average of the year before and the year after.

⁷² The total pension liability for fiscal years 2001-2013 was based on GASB (Government Accounting Standards Board) 25 and 27. The total pension liability for fiscal years 2014-2017 was based on GASB 67.

⁷³ Kobre & Kim is a law firm that was retained by the FOMB to investigate various aspects of Puerto Rico's financial problems. "Final Investigative Report." Kobre & Kim LLP, August 20, 2018, p. 201.

Exhibit 4. *ERS Net Assets, Pension Liabilities and Funded Ratios for Fiscal Years 1990-2017*



Notes and Sources:

- Data are from financial statements and actuarial valuation reports for Employees Retirement System of Puerto Rico and "Current Status of Benefit Structures, Protections, and Fiscal Outlook for Funding Future Costs," a September 2007 GAO Report to the Committee on Finance, U.S. Senate.
- Data on Total Pension Liability was unavailable for years 2002, 2004, 2006, and 2008, and was estimated as the arithmetic mean of the accrued pension liability for the previous year and the following year (indicated by lighter shaded bars).

C. The 2008 ERS Bonds Were Paid Using Employer Contributions

38. In an effort to address its funding challenges, the ERS issued three series of bonds (Series A, Series B, and Series C) with an initial aggregate principal value of \$2.95 billion in 2008.⁷⁴ The goal of the pension bond issuance was to reinvest the bond proceeds at a rate of return higher than the interest expense of the bonds. Puerto Rico expected to invest the proceeds

⁷⁴ Pension Bonds are used by municipalities with underfunded pensions to improve their funded ratios. For example, in June 2003, the state of Illinois offered \$10.0 billion in Pension Funding Bonds. *See*, \$10,000,000,000 State of Illinois General Obligation Bonds Pension Funding Series of June 2003.

of the bonds at returns that would earn 10 to 11 percent per year compared to the 5.85% to 6.55% interest that the ERS would pay on the bonds.⁷⁵

39. The Series A Bonds had an initial principal value of \$1.59 billion and were issued in January 2008. The Series B Bonds had an initial principal value of \$1.06 billion and were issued in May 2008. The Series C Bonds had an initial principal value of \$0.3 billion and were issued in June 2008.⁷⁶

40. The ERS Bonds are scheduled to mature between 2023 and 2058. There were 35 bond issuances in total. Twenty-five of the bonds, with initial principal balance of \$2.66 billion, paid coupons at rates between 5.85% and 6.55%. Ten of the bonds, with initial principal balance of \$0.29 billion, did not pay coupons, but rather accumulated accrued interest until maturity. Exhibit 5, below shows the original principal values, the coupons or accrued interest rate, and maturity dates of the ERS Bonds.

⁷⁵ See, for example, Government of Puerto Rico, House of Representatives, June 30, 2012.

⁷⁶ Employees Retirement System of the Government of the Commonwealth of Puerto Rico, *Official Statement: Senior Pension Funding Bonds, Series A*, January 29, 2008. Employees Retirement System of the Government of the Commonwealth of Puerto Rico, *Official Statement: Senior Pension Funding Bonds, Series B*, May 28, 2008. Employees Retirement System of the Government of the Commonwealth of Puerto Rico, *Official Statement: Senior Pension Funding Bonds, Series C*, June 26, 2008.

Exhibit 5. *Principal Value, Coupon, and Redemption Value of the ERS Bonds*

No.	Series	Type	Maturity	Coupon	Yield to Maturity	CUSIP	Initial Principal Amount	Maturity Principal Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total							\$ 2,947,648,343	\$ 3,841,110,000
Subtotal - Series A							\$ 1,588,810,800	\$ 1,700,450,000
Subtotal - Series B							1,058,634,613	1,833,660,000
Subtotal - Series C							300,202,930	307,000,000
Subtotal - Term Bonds							\$ 2,657,870,000	\$ 2,657,870,000
Subtotal - Capital Appreciation Bonds							289,778,343	1,183,240,000
1.	A	Term Bond	July 1, 2023	5.85%		29216MAF7	\$ 200,000,000	\$ 200,000,000
2.	A	Term Bond	July 1, 2031	6.15		29216MAG5	3,000,000	3,000,000
3.	A	Term Bond	July 1, 2032	6.15		29216MAH3	4,500,000	4,500,000
4.	A	Term Bond	July 1, 2033	6.15		29216MAJ9	4,000,000	4,000,000
5.	A	Term Bond	July 1, 2038	6.15		29216MAC4	667,500,000	667,500,000
6.	A	Term Bond	July 1, 2039	6.20		29216MAK6	167,920,000	167,920,000
7.	A	Term Bond	July 1, 2040	6.20		29216MAL4	89,750,000	89,750,000
8.	A	Term Bond	July 1, 2041	6.20		29216MAD2	37,550,000	37,550,000
9.	A	Term Bond	July 1, 2042	6.20		29216MAM2	37,550,000	37,550,000
10.	A	Term Bond	July 1, 2055	6.45		29216MAN0	86,950,000	86,950,000
11.	A	Term Bond	July 1, 2056	6.45		29216MAP5	83,350,000	83,350,000
12.	A	Term Bond	July 1, 2057	6.45		29216MAQ3	80,850,000	80,850,000
13.	A	Term Bond	July 1, 2058	6.45		29216MAE0	80,850,000	80,850,000
14.	A	Capital Appreciation Bond	July 1, 2028		6.20%	29216MAA8	12,264,908	42,665,000
15.	A	Capital Appreciation Bond	July 1, 2028		6.20	29216MAB6	32,775,892	114,015,000
16.	B	Term Bond	July 1, 2031	6.25%		29216MBA7	\$ 117,100,000	\$ 117,100,000
17.	B	Term Bond	July 1, 2036	6.30		29216MBB5	67,500,000	67,500,000
18.	B	Term Bond	July 1, 2037	6.30		29216MBC3	67,500,000	67,500,000
19.	B	Term Bond	July 1, 2038	6.30		29216MBD1	67,500,000	67,500,000
20.	B	Term Bond	July 1, 2039	6.30		29216MBE9	67,500,000	67,500,000
21.	B	Term Bond	July 1, 2055	6.55		29216MBF6	96,250,000	96,250,000
22.	B	Term Bond	July 1, 2056	6.55		29216MBG4	96,250,000	96,250,000
23.	B	Term Bond	July 1, 2057	6.55		29216MBH2	96,250,000	96,250,000
24.	B	Term Bond	July 1, 2058	6.55		29216MBJ8	140,250,000	140,250,000
25.	B	Capital Appreciation Bond	July 1, 2028		6.40%	29216MAT7	34,028,471	120,570,000
26.	B	Capital Appreciation Bond	July 1, 2029		6.40	29216MAU4	74,042,325	279,405,000
27.	B	Capital Appreciation Bond	July 1, 2030		6.40	29216MAV2	32,999,753	132,625,000
28.	B	Capital Appreciation Bond	July 1, 2031		6.45	29216MAW0	25,000,911	108,215,000
29.	B	Capital Appreciation Bond	July 1, 2032		6.45	29216MAX8	24,999,346	115,300,000
30.	B	Capital Appreciation Bond	July 1, 2033		6.45	29216MAY6	25,000,570	122,865,000
31.	B	Capital Appreciation Bond	July 1, 2034		6.45	29216MAZ3	26,463,237	138,580,000
32.	C	Term Bond	July 1, 2028	6.15%		29216MBL3	\$ 110,000,000	\$ 110,000,000
33.	C	Term Bond	July 1, 2038	6.25		29216MBN9	45,000,000	45,000,000
34.	C	Term Bond	July 1, 2043	6.30		29216MBP4	143,000,000	143,000,000
35.	C	Capital Appreciation Bond	July 1, 2030		6.50%	29216MBM1	2,202,930	9,000,000

Notes and Sources:

- Data are from the official statements of the ERS Bonds and Bloomberg.

41. According to the ERS Bond Resolution, the bonds would be paid from the Pledged Property, including the employer contribution component of the ERS funding system defined as “the contribution paid from and after the date hereof that are made by the Employers and any assets in lieu thereof or derived thereunder which are payable to the System pursuant to

Sections 2-116, 3-105 and 4-113 of the Act.”⁷⁷ These employer contributions were expected to be collected from the Commonwealth of Puerto Rico, the public corporations, and the municipalities.⁷⁸

42. A fiscal agent was selected to manage the collateral of the bonds.⁷⁹ According to the ERS Bond Resolution, cash flow streams from employer contributions would not go directly to the Treasury of Puerto Rico but would be held in accounts at the fiscal agent created by the Bond Resolution.⁸⁰ On the last business day of each month, ERS would transfer employer contributions to the fiscal agent and immediately thereafter, all revenues were to be deposited into the Revenue Account, an account which received revenue from the employer contributions, and from which funds were distributed for debt service, operating expenses and reserves.⁸¹

43. The offering document to the Series C Bonds included a report by a third-party consultant, Global Insight, which compared the bond service payments to the estimated annual future employer contributions between 2008 and 2058.⁸² The report projected a steady increase in employer contributions which would be more than adequate to service the ERS Bonds. Exhibit 6, below, compares the ERS Bond service requirements to the employer contributions, as projected by Global Insight.

⁷⁷ Employees Retirement System of the Government of the Commonwealth of Puerto Rico, “Pension Funding Bond Resolution,” Adopted on January 24, 2008, p. B-6.

⁷⁸ Act 447 as amended, p. 5.

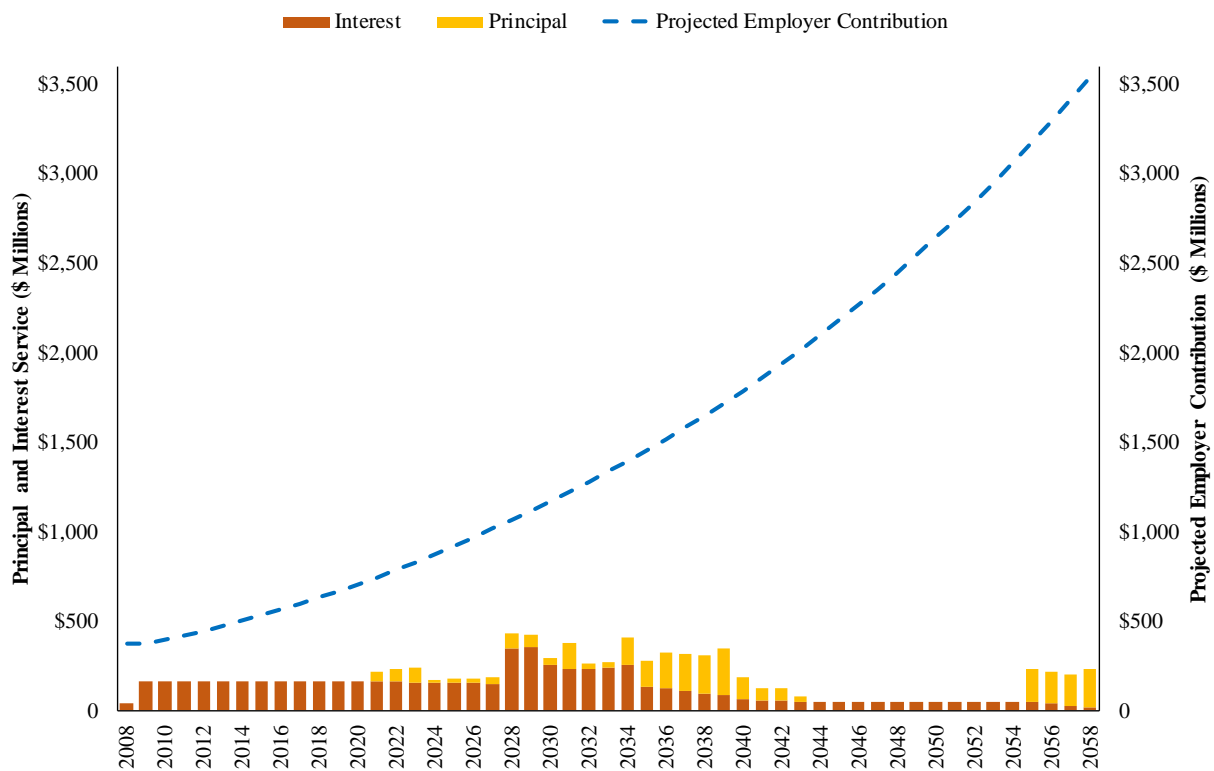
⁷⁹ Senior Pension Funding Bonds Series A, Bond Resolution, pp. 32-33.

⁸⁰ For example, the Series A Bond Resolution established six accounts to be held by the fiscal agent, which served as an intermediary. These accounts included the (1) Capitalized Interest Account, (2) Revenue Account, (3) Debt Service Account, (4) Debt Service Reserve Account, (5) General Reserve Account, and (6) Redemption Account. Employees Retirement System of the Government of the Commonwealth of Puerto Rico, “Pension Funding Bond Resolution,” Adopted on January 24, 2008, p. 16.

⁸¹ The Revenue Account Employees Retirement System of the Government of the Commonwealth of Puerto Rico, “Pension Funding Bond Resolution,” Adopted on January 24, 2008, pp. 17-18.

⁸² Global Insight, “Employees Retirement System of the Government of the Commonwealth of Puerto Rico (ERS): Covered Payroll Outlook (2008 - 2059),” as of June 26, 2008 (Appendix IV to the Offering Document of Series C ERS Bonds).

Exhibit 6. *Bond Service and Projected Employer Contributions for 2008-2058*



Notes and Sources:

- Data are from the official statements of ERS Series A, Series B, and Series C bonds. Projected Employer Contribution amounts are from Global Insight, Employees Retirement System of the Government of the Commonwealth of Puerto Rico (ERS): Covered Payroll Outlook (2008-2059), as of June 26, 2008 (Appendix IV to the offering document of Series C ERS bonds).

D. Payment of the Bond Obligation Since 2016

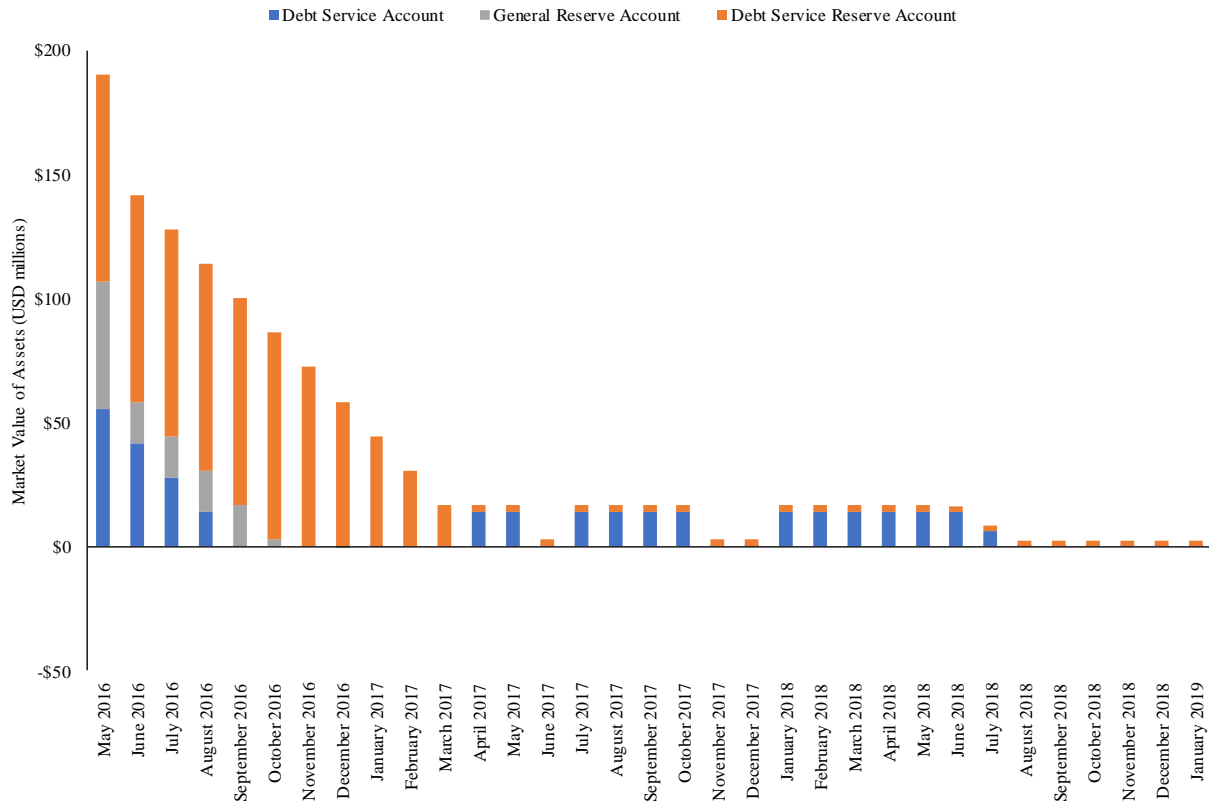
44. The fiscal agent's reports for the months of May and June 2016 document that the ERS revenues were transferred to the fiscal agent and the bonds were serviced prior to subsequent distributions to reserve accounts.⁸³ However, the enactment of Executive Order 2016-31 in June 2016 and subsequently of Joint Resolution 188 and Act 106-2017 in the summer of 2017 ended the transfer of employer contributions to the fiscal agent.⁸⁴ As a result, the assets

⁸³ These observations are based on my review of the fiscal agent reports that I received so far, which cover the period from May 2016 through January 2019. I have not received fiscal agent reports prior to May 2016 or after January 2019.

⁸⁴ See, Executive Order 2016-31, pp. 2-3; Joint Resolution 188, pp. 3-4; Act 106-2017, p. 13.

held by the fiscal agent were depleted over time.⁸⁵ Exhibit 7, below, shows the monthly value of assets held by the fiscal agent debt service, general reserve and debt service reserve accounts from 2016 through January 2019. The exhibit shows that the assets held by the fiscal agent decreased from just over \$190 million in May 2016 to approximately \$2 million in January 2019.

Exhibit 7. *Fiscal Agent Account Asset Values for 2016-2019*



Notes and Sources:

- Data are from all available monthly debt service, general reserve, and debt service reserve account statements by BNY Mellon received from counsel.

⁸⁵ I was asked by counsel to analyze the available fiscal agent reports. I also understand that as of March 2019, there is \$371 million in restricted ERS-related accounts subject to Title III proceedings; and the use of those funds “may be subject to court determination.” See, AAFAF, Summary of Bank Account Balances for the Government of Puerto Rico and its Instrumentalities, April 30, 2019.

IV. COMPARISON OF BENEFIT FUNDING SOURCES BEFORE AND AFTER 2017 RETIREMENT SYSTEM CHANGES

45. I examined the sources of pension system funding under ERS as compared to the PayGo fee that was enacted following Joint Resolution 188 and Act 106.⁸⁶ More specifically, I compared the sources of funding for the PayGo system during fiscal year 2018 to the sources of funding for the retirement system from fiscal years 2013 through 2016 using the financial statements of the ERS for the 2013 to 2016 period and the June 30, 2018 PayGo report.⁸⁷

46. As discussed in more detail in Section I.C above, in 2017, the retirement system in Puerto Rico was modified by Joint Resolution 188 and Act 106.⁸⁸ Act 106 nominally ended employer contributions and replaced them with a “PayGo” fee. Act 106 provided that the amount of PayGo fee “shall be equal to the amount actually paid to Pensioners and Beneficiaries from each covered entity.”⁸⁹

47. Exhibit 8, below, presents the additions and deductions for the ERS from fiscal year 2013 through 2016 and the allocation of PayGo funding and benefits for fiscal year 2018.⁹⁰ This exhibit demonstrates the sources available to ERS to pay the ERS bond interest, pension benefits, and other expenses. For example, during fiscal year 2013, \$213 million of ERS additions were from employer contributions from public corporations and municipalities, \$416 million were from employer contributions from the Commonwealth, \$323 million were from

⁸⁶ Joint Resolution 188, pp. 3-4. *See also*, Act 106, pp. 17-18.

⁸⁷ *See*, Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2014 and 2013; Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2015 and 2014; Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2016 and 2015; and Puerto Rico Fiscal Agency and Financial Advisory Authority, PayGo and Individual Contribution Debt by Entity, June 30, 2018.

⁸⁸ Joint Resolution 188, pp. 3-4. *See also*, Act 106, pp. 17-18.

⁸⁹ Act 106, pp. 17-18.

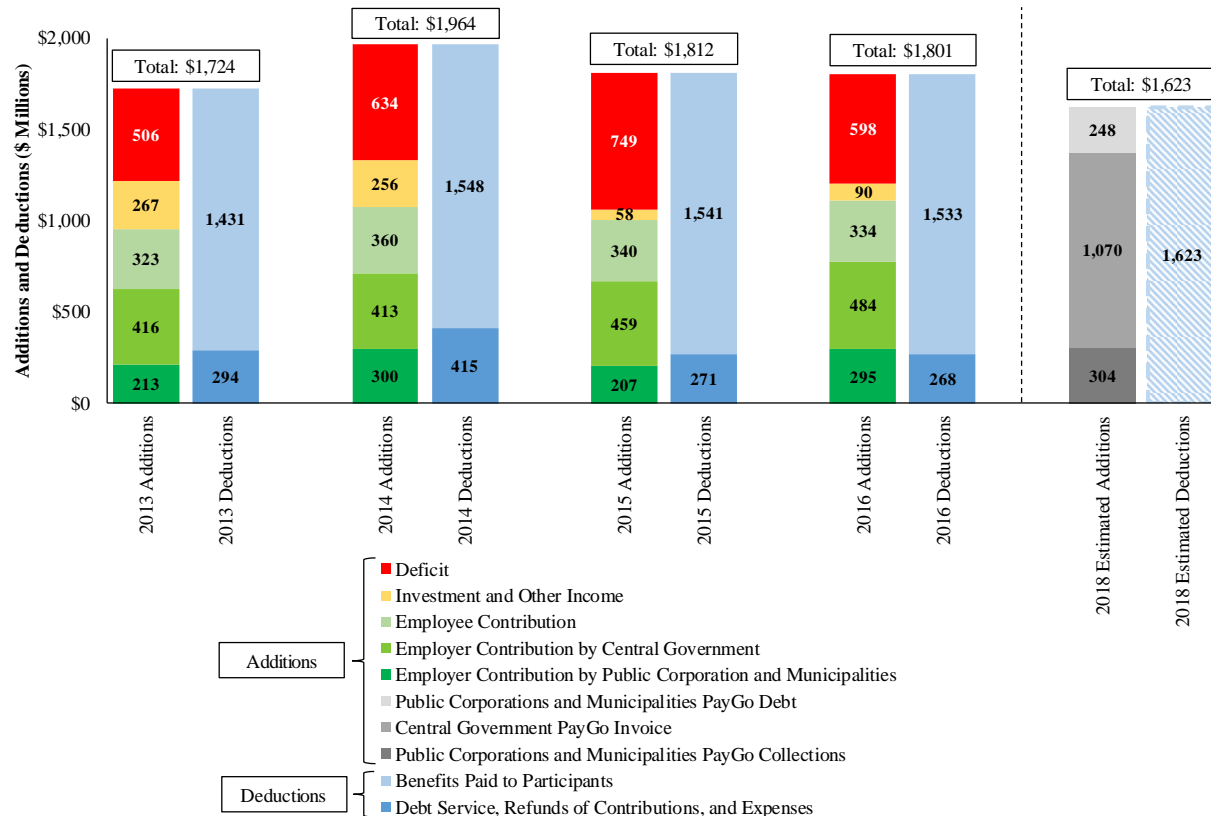
⁹⁰ 2013 through 2016 are the years for which I have the Schedules of Employer Allocations that allow me to determine the contributions of the Commonwealth of Puerto Rico. The ERS financial statement including the Schedule of Employer Allocations that provide employer contributions by entity was not available for fiscal year 2017.

employee contributions, and \$267 million were from investment and other income. Meanwhile in fiscal year 2013, \$1,431 million were deducted to pay benefits to ERS participants and beneficiaries and \$294 million were deducted to pay interest on the ERS Bonds, refunds of contributions, and other expenses. In fiscal year 2013 the total additions of \$1,218 million were \$506 million less than the total deductions of \$1,724 million.⁹¹ As of June 30, 2018, a total of \$553 million in PayGo fees were invoiced by AAFAF to municipalities and public corporations, of which \$304 million were collected and \$248 million remained as debt; and \$1,070 million in fees were invoiced by AAFAF to the Commonwealth.⁹²

⁹¹ I relied on the Schedules of Employer Allocations for fiscal years 2013 through 2016 for the employer contributions amount by employer each year. Employers are classified as Commonwealth, public corporations, or municipalities based on the classification in the June 30, 2018 PayGo report and in ERS_LS0009366 spreadsheet. The results remain qualitatively the same if I only include the entity named “Central Government” in the Commonwealth category.

⁹² According to the June 30, 2018 PayGo report, there are 53 public corporations and 78 municipalities for which PayGo invoices were reported. *See*, “PayGo and Individual Contribution Debt by Entity,” Puerto Rico Fiscal Agency and Financial Advisory Authority, June 30, 2018.

Exhibit 8. *ERS Additions and Deductions for Fiscal Years 2009-2016 and 2018*



Notes and Sources:

- Data are from the Employees' Retirement System of the Government of the Commonwealth of Puerto Rico's Basic Financial Statements and Required Supplementary Information and the Schedules of Employer Allocations for FY 2013 to 2016, the PayGo and Individual Contribution Debt by Entity Report for FY 2018, and ERS_LS0009366. The Schedule of Employer Allocations for FY 2017 is not available.

48. I then examined the percentage of funding from the three employer types: Commonwealth, municipalities, and public corporations. Exhibit 9, below, calculates the percentage of funding from these three sources. For the fiscal years from 2013 through 2016, the percentages reflect the percentage of employer contributions from each of the three employer types.⁹³ For fiscal year 2018, the percentages represent the portion of the AAFAF's allocation of

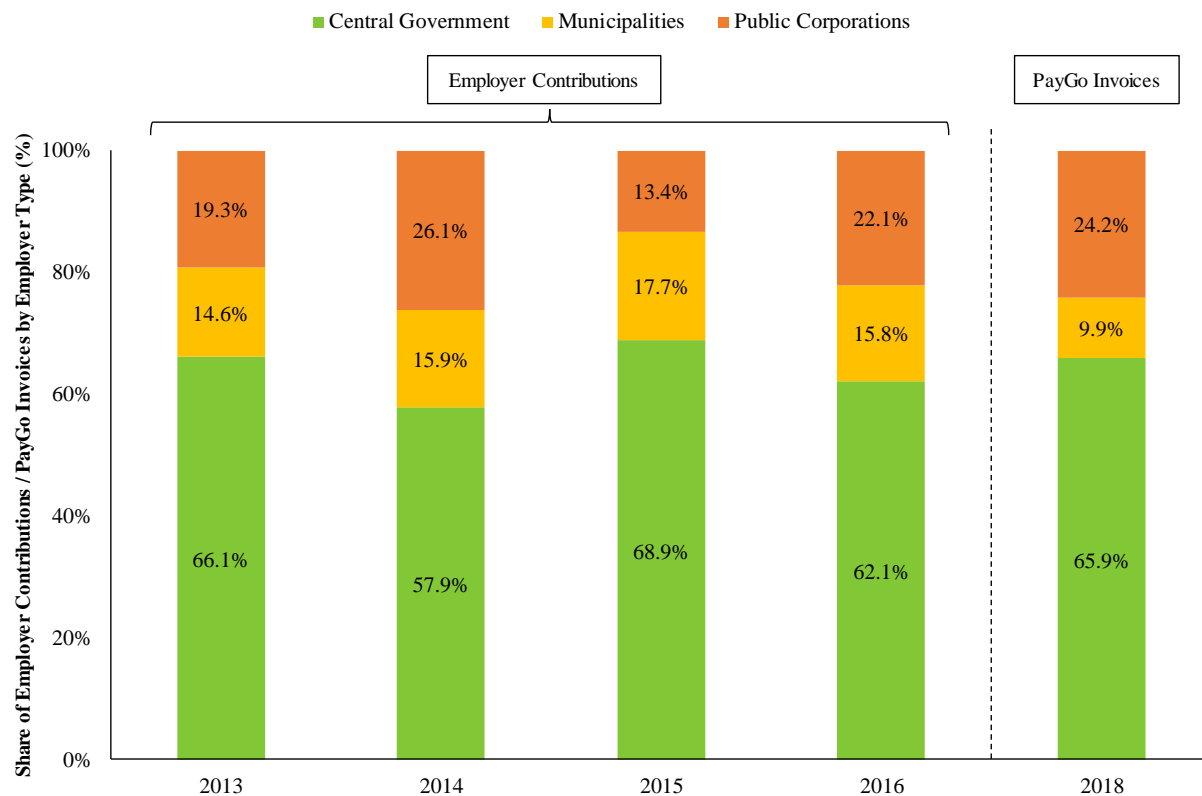
⁹³ I relied on the Schedules of Employer Allocations for fiscal years 2013 through 2016 for the employer contributions amount by employer each year. 2013 through 2016 are the years for which I have the Schedules of Employer Allocations that allow me to determine the contributions of the Commonwealth of Puerto Rico. The ERS financial statement including the Schedule of Employer Allocations that provide employer contributions by entity was not available for fiscal year 2017. Employers are classified as Commonwealth, public corporations, or municipalities based on the June 30, 2018 PayGo report and the file ERS_LS0009366 spreadsheet. The results remain qualitatively the same if I only include the entity named "Central Government" in the Commonwealth category.

PayGo fees to the entities in each category. The switch to the PayGo system did not notably change the relative shares of the Commonwealth, municipalities and public corporations in terms of PayGo invoices as compared to their actual employer contributions under the ERS system, as reported in the audited financial statements during the fiscal years 2013 to 2016. For example, in fiscal year 2016, 62.1 percent of the Employer Contributions were from the Commonwealth, 15.8 percent of contributions were from the municipalities, and 22.1 percent of employer contributions came from public corporations.⁹⁴ In fiscal year 2018, 65.9 percent of PayGo fees were invoiced to the Commonwealth, 9.9 percent of PayGo fees were invoiced to municipalities, and 24.2 percent of PayGo fees were invoiced to public corporations. The exhibit demonstrates that the percentage of funding from each of the three sources was relatively consistent between fiscal years 2013 through 2018.⁹⁵

⁹⁴ See also, Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 228.

⁹⁵ I relied on the Schedules of Employer Allocations for fiscal years 2013 through 2016 for the employer contributions amount by employer each year. 2013 through 2016 are the years for which I have the Schedules of Employer Allocations that allow me to determine the contributions of the Commonwealth of Puerto Rico. The ERS financial statement including the Schedule of Employer Allocations that provide employer contributions by entity was not available for fiscal year 2017.

Exhibit 9. *Percentage of Employer Contribution or PayGo Fees by Employer Type for Fiscal Years 2009-2016 and 2018*



Notes and Sources:

- Data for 2013 - 2016 are from the Schedules of Employer Allocations for the Employees' Retirement System of the Government of the Commonwealth of Puerto Rico, the June 30, 2018 PayGo and Individual Contribution Debt by Entity report, and ERS_LS0009366.

49. In summary, the ERS was chronically underfunded, and over time this resulted in a reduction in the ERS system assets, and a reduction in the ERS funding ratio. In 2008, the ERS issued almost \$3 billion in ERS Bonds using the employer contributions among other things as collateral. The employer contributions were historically used to service debt. In 2017, legislation changed the pension system to PayGo. However, the sources of the funding by employer types remain consistent between the ERS during fiscal years 2013 to 2016 and the PayGo system in fiscal year 2018.

V. PAYGO FEES ARE A TIME-LIMITED SOURCE OF FUNDS

50. According to the official statements of the ERS Bonds, the principal and interest payments on the ERS Bonds are scheduled to continue until 2058.⁹⁶ However, starting on July 1, 2017, new employees will not be ERS members and no future benefits will be accrued to existing ERS members.⁹⁷ Even if employers pay their PayGo fees, the projected ERS Benefit Payments are expected to decline over the remaining life of the bonds by about 72 percent between 2020 and 2058.⁹⁸ The PayGo fees are therefore a time-limited source of funds.

A. PayGo Fees Are Not Paid into A Fund That Grows Over Time

51. I understand that under the PayGo system, “[a]ll government agencies (including the central government), participating public corporations, and municipalities, will pay into the government Treasury Single Account (TSA) the amounts necessary for the monthly pension payments for each of their retirees and beneficiaries” and PayGo fees “shall be equal to the amount actually paid to Pensioners and Beneficiaries from each covered entity.”⁹⁹

52. The Memorandum of Understanding (“MOU”) between the Government of Puerto Rico, AAFAF, and ERS generally describes how payments for Puerto Rico’s retirement

⁹⁶ Official Statements of the Employees Retirement System of the Government of the Commonwealth of Puerto Rico, Senior Funding Bonds, Series A, Series B, and Series C.

⁹⁷ Milliman, “Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report,” March 2019, pp. 6, 7. “New employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be PRGERS members.” “Because of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members.”

⁹⁸ Milliman’s report dated December 21, 2017 estimated ERS Benefit Payments under the PayGo system for Commonwealth agencies and all but six public corporations. According to Milliman’s projections, projected ERS benefits related to these agencies will decline by about 72 percent between 2020 and 2058. I divided Milliman’s projected benefits by 89.2 percent (a ratio based on 2018 PayGo invoices for Milliman’s selected agencies, as discussed below) to estimate total ERS Benefit Payments for all Commonwealth agencies, public corporations and municipalities and hence documented the same 72 percent decline between 2020 and 2058.

⁹⁹ See, Financial Oversight and Management Board for Puerto Rico, Explanatory Memorandum on Pension Reform, August 4, 2017, p. 5; and Act 106-2017, p. 17.

systems would operate after the ERS assets were depleted.¹⁰⁰ According to the MOU as of June 2017:¹⁰¹

- a. Every month, ERS would provide AAFAF with a statement setting forth the amount of benefits due to beneficiaries;
- b. From this, AAFAF would calculate the PayGo fee for each employer in order for the Government to pay all retirement benefits corresponding to beneficiaries of each employer;
- c. ERS would then provide each employer a monthly invoice for its PayGo fees;
- d. ERS would instruct each employer to remit payments to a designated bank account;
- e. ERS would also transfer to the treasury of the Commonwealth of Puerto Rico (the “Treasury”) all funds available to the ERS, after making a reasonable reserve for operating expenses;
- f. The Treasury would make the monthly payment of retirement benefits to beneficiaries using PayGo fees received, appropriations in the expense budget of the Government of Puerto Rico to fund any deficiencies in the payment of pension benefits and funds available to the ERS.

¹⁰⁰ ERS-CW_LS0000388.

¹⁰¹ ERS-CW_LS0000388, p. 3.

53. In other words, PayGo fees are not paid into, nor accumulated in, a fund that grows over time. Instead, they are used to pay benefits for current beneficiaries after they are received.¹⁰²

B. PayGo Fees Are Projected to Decline Over the Remaining Life of the Bonds Based on My Analysis of Milliman's Projections of the Fees

54. PayGo fees are expected to decline over the remaining life of the ERS Bonds based on my analysis of Milliman's projections for the Commonwealth and most public corporations in their December 2017 report that includes annual projections of ERS Benefit Payments under the PayGo system according to Act 106-2017.¹⁰³ I have requested several documents in the possession or control of the Respondents including the models, spreadsheets, and calculations supporting Milliman's projections for ERS benefits but have not yet received the backup documentation for the projections. I reserve the right to conduct further work upon receiving such documents.

55. My analysis based on the Milliman projections demonstrates that ERS Benefit Payments are projected to decline by about 72 percent, from \$1,697 million during fiscal year 2020 to \$476 million during fiscal year 2058. These PayGo projections include my extrapolation of future ERS Benefit Payments for municipalities and the remaining public corporations.

56. I was asked to assess the risks of servicing the ERS debt assuming that PayGo fees would be used as a source of re-payment to the bondholders. To address this question, I

¹⁰² The "Summary of Bank Account Balances for the Government of Puerto Rico and its Instrumentalities" reports show the balances for pension accounts for PayGo fees. For example, the report for the month ended June 30, 2018 states that for that month, the balance was increased by "payments made by municipalities and public corporations in connection with benefits paid to retirees" and decreased because of, "transfers to the TSA for reimbursement of pension payments in the amount of \$37M." After the receipt of the PayGo fees and the transfer of funds to the TSA, the remaining balance for the PayGo account was \$5.2 million. *See*, for example, Government of Puerto Rico, Puerto Rico Fiscal Agency and Financial Advisory Authority, "Summary of Bank Account Balances for the Government of Puerto Rico and its Instrumentalities: Information as of June 30, 2018," July 24, 2018, p. 9.

¹⁰³ Milliman, "PRGERS Estimated Projected Benefit Payments reflecting Act 106-2017 – Agencies Covered by Fiscal Plan Only – revised – CONFIDENTIAL," December 21, 2017.

estimated total legacy ERS Benefit Payments for all Commonwealth agencies, public corporations and municipalities under the PayGo system from 2018 to 2058 based on my analysis of Milliman's projections of ERS benefits. Milliman projected benefit payments for all agencies covered by the fiscal plan as well as select public corporations, but excluded six public corporations and all municipalities.¹⁰⁴ The Milliman projections do not reflect the potential 10 percent reduction in aggregate benefit payments anticipated by the May 2019 certified fiscal plan.¹⁰⁵

57. Exhibit 10 presents the projected ERS benefits under the PayGo system from 2018 to 2058, by the Commonwealth, public corporations and municipalities. The projected ERS Benefit Payments are estimated to be \$1,697 million during fiscal year 2020, but are expected to decline by 6 percent to \$1,597 million by fiscal year 2035, decline further to \$1,145 million by fiscal year 2045 and yet further to \$476 million by fiscal year 2058. This is a 72 percent decline between fiscal years 2020 and 2058. Exhibit 10 does not reflect the potential 10 percent reduction in benefit payments.

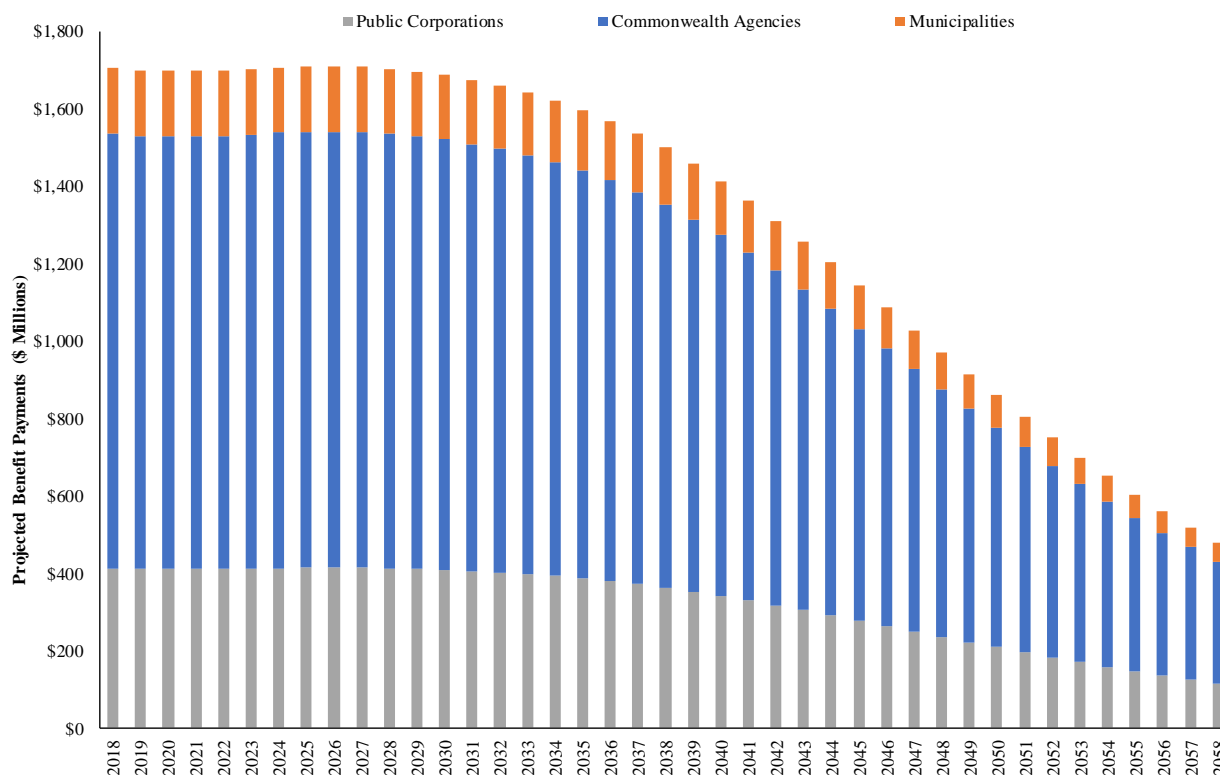
¹⁰⁴ CW_RJM2004_0018471.

¹⁰⁵ Milliman, "PRGERS Estimated Projected Benefit Payments reflecting Act 106-2017 – Agencies Covered by Fiscal Plan Only – revised – CONFIDENTIAL," December 21, 2017, p. 3. "As a result, the estimated projected benefit payments for PRGERS reflecting Act 106-2017 are the same as used for the June 30, 2016 valuation expect that the estimated Defined Contribution Hybrid Contribution Accounts have been frozen as of July 1, 2017." See, also, Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2016 Actuarial Valuation Report," October 23, 2018, p. 11. "The Fiscal Plan for Puerto Rico (dated March 13, 2017) was approved by the Puerto Rico Fiscal Board (a body created by the enactment of the Puerto Rico Oversight, Management, and Economic Stability Act ("PROMESA")). The approval was conditioned on the Puerto Rico government and the Board reaching an agreement to reduce benefit payments of the following systems by 10 percent in the aggregate:

- Puerto Rico Government Employees Retirement System
- Puerto Rico Judiciary Retirement System
- Puerto Rico Teachers Retirement System

The details of the reduction methodology, which will determine how the reductions impact each system, are not final at this time. A multi-year delay in implementation is also anticipated. These potential reductions are not reflected in this June 30, 2016 valuation."

Exhibit 10. *Projected ERS Benefit Payments Adjusted to Reflect Act 106-2017 for Fiscal Years 2018 - 2058*



Notes and Sources:

-Data are from a Milliman report, "PRGERS Estimated Projected Benefit Payments reflecting Act 106-2017," dated December 21, 2017 and PayGo and Individual Contribution Debt by Entity, dated June 30, 2018.
-Projections from Milliman are available for all commonwealth agencies and all but six public corporations. Projections for the six public corporations and municipalities were estimated based on actual PayGo invoices for fiscal year 2018.

58. Milliman's report dated December 21, 2017 projected benefits under the PayGo system (instituted by Act 106-2017) for Commonwealth agencies and all but six public corporations.¹⁰⁶ In fiscal year 2018, these Commonwealth agencies and public corporations, excluding the six, accounted for 89.2 percent of PayGo invoices of \$1.62 billion (based on data from the June 30, 2018 PayGo report).¹⁰⁷ I estimated total benefits for all Commonwealth

¹⁰⁶ The six excluded public corporations are Agency 218: Asociacion de Empleados del ELA, Agency 228: Crop. Sup. Y Seq. Coop. (COSSEC), Agency 245: Banco de Desarrollo Economico (EDB), Agency 279: Centro de Recaudacion de Ingresos Municipales (CRIM), Agency 281: UPR Sistema de Retiro, and Agency 506: Metropistas. See, Milliman, "PRGERS Estimated Projected Benefit Payments reflecting Act 106-2017 – Agencies Covered by Fiscal Plan Only – revised – CONFIDENTIAL," December 21, 2017.

¹⁰⁷ "PayGo and Individual Contribution Debt by Entity," Puerto Rico Fiscal Agency and Financial Advisory Authority, June 30, 2018. The June 2018 PayGo report includes invoices from July 2017 - June 2018, the last full fiscal year.

agencies, public corporations and municipalities by assuming that each year, Milliman's projected benefits would equal 89.2 percent of total ERS Benefit Payments. For example, I estimated the total benefits for all Commonwealth agencies, public corporations, and municipalities to be \$1,697 million during fiscal year 2020 by scaling up Milliman's projections for this year (\$1,514 million) by a factor of 1.12 (100 percent / 89.2 percent).

59. In order to estimate the ERS Benefit Payments for Commonwealth agencies, public corporations, and municipalities, I multiplied the estimated total ERS Benefit Payments each year by the fraction of PayGo fees that each employer type was invoiced for fiscal year 2018. In fiscal year 2018, Commonwealth agencies, public corporations, and municipalities accounted for 65.9 percent, 24.2 percent, and 9.9 percent of total PayGo invoices, respectively.¹⁰⁸ I used these percentages to divide the estimated total PayGo projections each year across the three types of entities. For example, I estimated the projected ERS Benefit Payments for Commonwealth agencies, public corporations, and municipalities during fiscal year 2020 to be \$1,119 million, \$410 million, and \$168 million by multiplying the estimated total ERS Benefit Payments in 2020 (\$1,697 million) by 65.9 percent, 24.2 percent, and 9.9 percent, respectively.

60. Even if all employers were to pay their PayGo fees in full, the relevant population for PayGo is expected to decline over the remaining life of the bonds for several reasons. First, I understand that after July 1, 2017 no new members will join ERS.¹⁰⁹ Second, given the average ages for ERS participants and the mortality rates as applied by Milliman, the population of ERS members that are currently receiving benefits is expected to decline over the relevant period.¹¹⁰

¹⁰⁸ "PayGo and Individual Contribution Debt by Entity," Puerto Rico Fiscal Agency and Financial Advisory Authority, June 30, 2018.

¹⁰⁹ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report," March 2019, p. 6. "New employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be PRGERS members."

¹¹⁰ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2016 Actuarial Valuation Report," October 23, 2018, p. 32.

Third, existing ERS members that may join the ERS retiree population in the future do not accrue additional benefits under the legacy retirement systems that will be funded by PayGo.¹¹¹

61. In order to assess the projected PayGo population, I examined ERS members' age and creditable years of service based on the summary statistics of the census data used by Milliman.¹¹² Exhibit 11 below shows summary statistics on age and tenure for ERS members based on ERS census data as of July 1, 2015. As of mid-2015, the average age for retired members is 69.3 years, and 69.9 years and 74.4 years for disabled members and beneficiaries in payment, respectively.¹¹³ Given the average ages and the mortality rates as applied by Milliman, this population of ERS members will decline over the relevant period.¹¹⁴

¹¹¹ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report," March 2019, p. 7. "Because of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members."

¹¹² Milliman, "PRGERS Estimated Projected Benefit Payments reflecting Act 106-2017 – Agencies Covered by Fiscal Plan Only – revised – CONFIDENTIAL," December 21, 2017, p. 5. Milliman, "The most recent valuation performed for PRGERS was based on census data as of July 1, 2015 for use in the development of the June 30, 2016 Total Pension Liability for GASB 67 reporting purposes and the Actuarial Accrued Liability under GASB 45. This census data (as adjusted to remove members from agencies not covered by the fiscal plan) and valuation serves as the baseline for this analysis."

Summary statistics for ERS census data as of July 1, 2015 are reported in Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2016 Actuarial Valuation Report," October 23, 2018, p. 32.

¹¹³ Puerto Rico Government Employees Retirement System, June 30, 2016 Actuarial Valuation Report, pp. 32, 47. Beneficiaries in payment include, for example, the surviving spouses, and/or children, and in some cases parents of deceased ERS members.

¹¹⁴ The ERS system also provides for post-retirement death benefit for members. *See*, Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report," March 2019, pp. 41-42.

Exhibit 11. *Summary Statistics of ERS Active Members and Beneficiaries as of July 1, 2015*

	<u>Act 447</u> (1)	<u>Act 1</u> (2)	<u>System 2000</u> <u>/ Act 3</u> (3)	<u>Total</u> (4)
Active Members				
Count	15,811	38,263	65,605	119,679
Average Age	54.6	50	42.7	46.6
Average Creditable Service	28.0	20.3	9.5	15.4
Retired Members				
Count	84,658	10,048	273	94,979
Average Age	69.7	66.2	67.8	69.3
Disabled Members				
Count	13,021	2,351	72	15,444
Average Age	71.0	64.5	54.2	69.9
Beneficiaries in Payment				
Count	14,261	328	81	14,670
Average Age	74.5	71.2	62.5	74.4

Notes and Sources:

- Data are from "Puerto Rico Government Employees Retirement System: June 30, 2016 Actuarial Valuation Report."

62. In addition, under Act 106-2017 as of July 1, 2017, the prospective accruals for all active members were changed to a New Defined Contribution Plan, which is outside of ERS.¹¹⁵ I understand that as a result, PayGo fees will not fund retirement benefits accrued by active members of the Act 447, Act 1 and System 2000 plans after July 1, 2017. The Milliman Actuarial Valuation Report as of June 30, 2016 shows that, as of mid-2015, the average creditable service for active members is 15.4 years.¹¹⁶ According the Milliman's 2016 actuarial report, as of July 1, 2017, ERS retirees – whether under Act 447, Act 1 or System 2000 – had worked all of their public service years under pension plans that are now funded by PayGo.

¹¹⁵ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report," March 2019, p. 6. "New employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be PRGERS members."

¹¹⁶ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2016 Actuarial Valuation Report," October 23, 2018, p. 32.

However, members that were active as of July 1, 2017 will retire after working for some time under Act 106's New Defined Contribution Plan. PayGo fees will not fund benefits accrued after July 1, 2017. As a result, older active employees whose service years will mostly be funded by PayGo will retire first and then exit the beneficiary population over time, while younger active employees with fewer service years covered by PayGo will enter the beneficiary population later. This will result in lower PayGo fees in the future.

C. Summary

63. In summary, I was asked to assess the risks of repayment assuming that PayGo fees would be a source of servicing the debt obligations of the ERS Bonds. I understand that PayGo fees are not paid into, nor accumulated in, a fund that grows over time. Instead, they are spent to pay benefits for current beneficiaries after they are received. Meanwhile, starting on July 1, 2017, new employees will not be ERS members and no future benefits will be earned by ERS members.¹¹⁷ According to my analysis of Milliman's projections, even if employers pay their PayGo invoices, the projected ERS Benefit Payments are expected to decline over the remaining life of the bonds by about 72 percent. The PayGo fees are therefore a time-limited source of funds.

VI. THE FINANCIAL CONDITIONS OF THE COMMONWEALTH, MUNICIPALITIES, AND PUBLIC CORPORATIONS

64. There are indications that the Commonwealth of Puerto Rico, its public corporations, and the municipalities, will continue to face financial difficulties. These difficulties have led to missed payments of PayGo fees, and may risk additional non-payment either now or before the maturity of the bonds in 2058.

¹¹⁷ Milliman, "Puerto Rico Government Employees Retirement System, June 30, 2017 Actuarial Valuation Report," March 2019, pp. 6, 7. "New employees hired July 1, 2017 or later will be participants in a separate defined contribution plan and will not be PRGERS members." "Because of Act 106-2017, no future benefits (except for the additional benefits due to death or disability for reasons specified in Act 127-1958) will be earned by PRGERS members."

A. The May 2019 Certified Fiscal Plan Indicates That PayGo Fees Could Be at Risk

65. The Central Government of Puerto Rico is the largest government employer responsible for contributions to the pension system of Puerto Rico under both the ERS and the PayGo system.¹¹⁸ However, as recognized by the current FOMB fiscal plan as of May 9, 2019, the government of Puerto Rico is in financial distress and faces structural challenges that could make recovery difficult. As a result, the primary source of the PayGo fees could be at risk. The May 2019 certified fiscal plan describes the ongoing challenges that the Commonwealth of Puerto Rico faces. These challenges include a shrinking economy, high poverty rates, out migration, declining birth rates, and an aging workforce.¹¹⁹ Similarly, in its April 2019 “Announcement of Periodic Review,” Moody’s stated that “Puerto Rico’s Ca rating is aligned with our estimates of the Commonwealth’s reduced debt servicing capacity given years of structural imbalance, extensive damage from Hurricane Maria and ongoing restructuring efforts.”¹²⁰ These challenges will likely persist after Puerto Rico’s current financial crisis is resolved.

66. The May 2019 certified fiscal plan also calls for reducing pension payments and thus PayGo fees. The fiscal plan states that “Action must be taken to identify a level of benefits that Puerto Rico can afford and devise a plan for the Government to fund these revised benefits.”¹²¹ The fiscal plan proposes a “10% pensions benefit reduction” as one of the planned

¹¹⁸ See, Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2014 and 2013; Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2015 and 2014; Employees’ Retirement System of the Government of the Commonwealth of Puerto Rico, Schedules of Employer Allocations, June 30, 2016 and 2015; and Puerto Rico Fiscal Agency and Financial Advisory Authority, PayGo and Individual Contribution Debt by Entity, June 30, 2018. See also, Commonwealth of Puerto Rico, Financial Information and Operating Data Report, December 18, 2016, p. 228.

¹¹⁹ Certified Fiscal Plan, May 9, 2019, pp. 8-9, 24-25.

¹²⁰ Genevieve Nolan and Timothy Blake, “Moody’s announces completion of a periodic review of ratings of Puerto Rico (Commonwealth of),” *Moody’s Investor Service*, April 19, 2019, available at: https://www.moody.com/research/Moodys-announces-completion-of-a-periodic-review-of-ratings-of-PR_905793280

¹²¹ Certified Fiscal Plan, May 9, 2019, p. 129.

steps to alleviate this problem.¹²² The deadline for implementing the 10 percent benefit reduction is July 1, 2020.¹²³ It is estimated that this benefit reduction will yield between \$231 and \$245 million dollars of annual savings between fiscal years 2021 and 2024. Total savings over this four-year period are estimated to be approximately \$953 million.¹²⁴

67. In addition, the 2019 certified fiscal plan discusses a plan to reduce Commonwealth aid to municipalities. These reductions could negatively affect the fiscal situation of the municipalities and place additional risk on the municipalities' ability to remit PayGo fees in the future. According to the May 2019 certified fiscal plan, the Commonwealth of Puerto Rico provided \$220 million in subsidies to Puerto Rico's 78 municipalities in fiscal year 2018.¹²⁵ The fiscal plan seeks to reduce those subsidies over the next several fiscal years, ultimately eliminating municipal subsidies in fiscal year 2024.¹²⁶

68. Exhibit 12, below, shows the projected subsidies to municipalities in the May 2019 certified fiscal plan should the proposed reduction of municipal appropriations be adopted. It demonstrates that the May 2019 certified fiscal plan seeks to reduce municipal subsidies from \$220 million in fiscal year 2018 to \$132 million in fiscal year 2020, to \$44 million in fiscal years 2022 and 2023, and eliminating subsidies in fiscal year 2024.

¹²² Certified Fiscal Plan, May 9, 2019, p. 131.

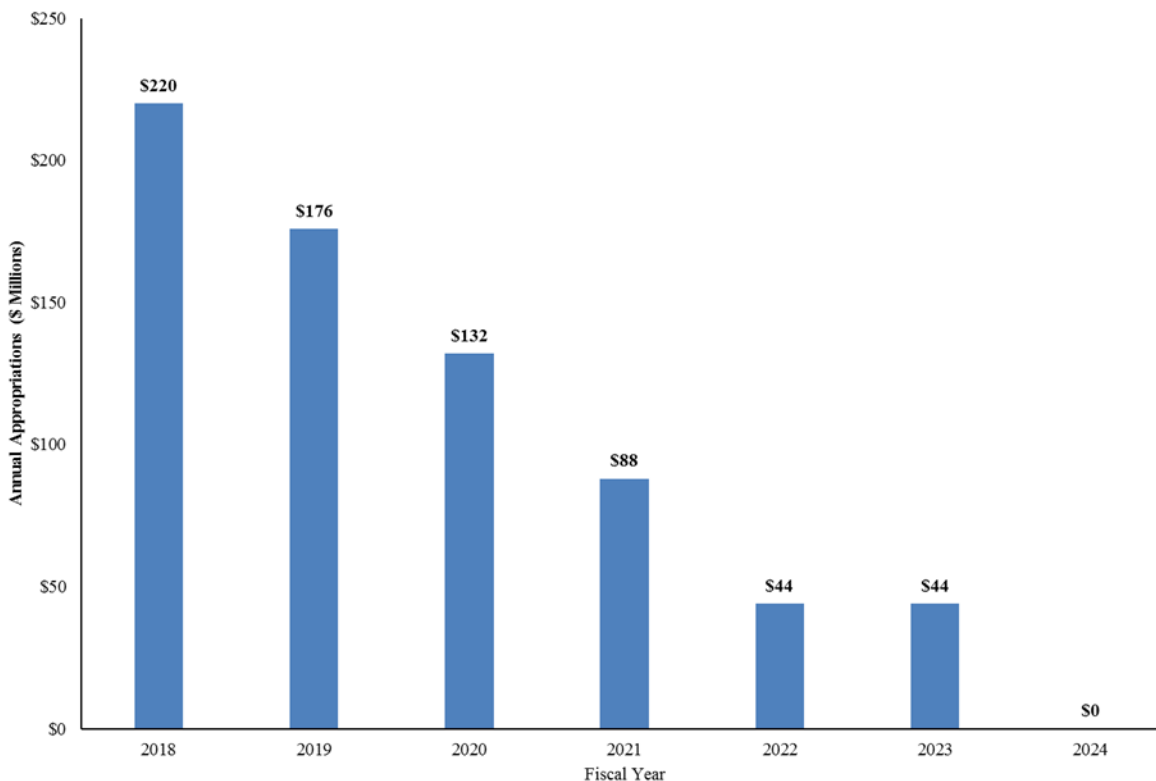
¹²³ Certified Fiscal Plan, May 9, 2019, p. 133.

¹²⁴ These savings estimates represent total savings for the legacy ERS system, the Teachers' Retirement System, and the Judicial Retirement system. Certified Fiscal Plan, May 9, 2019, pp. 129-130.

¹²⁵ Certified Fiscal Plan May 9, 2019, p. 124.

¹²⁶ Certified Fiscal Plan, May 9, 2019, pp. 125-126.

Exhibit 12. *Projected Annual Subsidies to Municipalities According to the May 2019 Certified Fiscal Plan for Fiscal Years 2018-2024*



Notes and Sources:

- Data are from the Fiscal Plan for Puerto Rico, "Restoring Growth and Prosperity," As certified by the Financial Oversight and Management Board for Puerto Rico, May 9, 2019.

B. Failure of Municipalities and Public Corporations to Pay PayGo Invoices in Full

69. For PayGo fees invoiced in fiscal year 2018, the municipalities and public corporations failed to pay 38.2 percent and 19.3 percent of the invoiced PayGo, respectively as of April 19, 2019.¹²⁷ On April 30, 2019, an FOMB letter reported, based on the latest "PayGo and Individual Contribution Debt by Entity" report by the AAFAF, that it was "very concerned with the repeated practice of non-transfer of employee contributions that are required to be set

¹²⁷ See, Letter to The Honorable Raúl Maldonado Gautier, Esq., CPA and Mr. Luis Collazo Rodríguez, from the Financial Oversight and Management Board of Puerto Rico, April 30, 2019. See also, Puerto Rico Fiscal Agency and Financial Advisory Authority, PayGo and Individual Contribution Debt by Entity, June 30, 2018.

aside, as well as the failure of many municipalities and public corporations to remit their required monthly PayGo fees.”¹²⁸ According to the letter, there were “approximately \$340 million in accrued debt from 28 public corporations and 66 municipalities since implementation of the PayGo system in 2017.”¹²⁹

70. Exhibit 13, below, summarizes the largest non-payments as of April 2019 by municipalities in for PayGo fees invoiced in fiscal year 2018. The three municipalities with the largest non-payment totals were San Juan at \$34.9 million, Ponce at \$4.7 million, and Toa Baja at \$3.4 million.

Exhibit 13. *Unpaid Fiscal Year 2018 PayGo Fees by Municipalities as of April 2019*

Municipality	PayGo Invoices	PayGo Debt	PayGo Debt as a %age of PayGo Invoices
(1)	(2)	(3)	(4)
<i>--in thousands of US dollars--</i>			
San Juan	\$ 54,730	\$ 34,902	63.8%
Ponce	7,548	4,652	61.6
Toa Baja	3,825	3,388	88.6
Caguas	6,910	3,335	48.3
Arecibo	3,573	2,947	82.5
Other Municipalities	83,919	12,105	14.4
All Municipalities	\$ 160,505	\$ 61,329	38.2%

Notes and Sources:

- Data on invoices are from "PayGo and Individual Contribution Debt by Entity," published on June 30, 2018 by the Puerto Rico Fiscal Agency and Financial Advisory Authority. Data on debt are from a letter regarding PayGo debt sent by the FOMB, dated April 30, 2019.
- Total PayGo Debt may not exactly match FOMB letter due to rounding.

71. Exhibit 14, below, summarizes the largest non-payments as of April 2019 by public corporations for PayGo fees invoiced in fiscal year 2018. The three public corporations with the largest non-payment totals were the Puerto Rico Ports Authority at \$22.7 million, the

¹²⁸ Letter to The Honorable Raúl Maldonado Gautier, Esq., CPA and Mr. Luis Collazo Rodríguez, from the Financial Oversight and Management Board of Puerto Rico, April 30, 2019, p. 1.

¹²⁹ Letter to The Honorable Raúl Maldonado Gautier, Esq., CPA and Mr. Luis Collazo Rodríguez, from the Financial Oversight and Management Board of Puerto Rico, April 30, 2019, p. 2.

Metropolitan Bus Authority at \$13.6 million, and the Puerto Rico Industrial Development Company, at \$9.0 million.

Exhibit 14. *Unpaid Fiscal Year 2018 PayGo Fees by Public Corporations as of April 2019*

Public Corporation	PayGo Invoices	PayGo Debt	PayGo Debt as a %age of PayGo Invoices
(1)	(2)	(3)	(4)
	<i>--in thousands of US dollars--</i>		
Puerto Rico Ports Authority	\$ 25,186	\$ 22,686	90.1%
Metropolitan Bus Authority	13,588	13,588	100.0
PR Industrial Development Co.	15,385	9,025	58.7
State Insurance Fund	94,443	6,649	7.0
PRASA	93,639	4,645	5.0
Other Public Corporations	149,902	19,213	12.8
All Public Corporations	\$ 392,143	\$ 75,806	19.3%

Notes and Sources:

- Data on invoices are from "PayGo and Individual Contribution Debt by Entity," published on June 30, 2018 by the Puerto Rico Fiscal Agency and Financial Advisory Authority. Data on debt are from a letter regarding PayGo debt sent by the FOMB, dated April 30, 2019.
- Total PayGo Debt may not exactly match FOMB letter due to rounding.

C. Decisions by the Puerto Rico Legislature that May Affect the Municipalities and Public Corporations

72. An additional source of risk to the PayGo fees from the municipalities is recent legislation that excuses municipalities from having to remit PayGo fees. In May 2019, the House and Senate of Puerto Rico passed, and Governor Rossello signed, Senate Bill 1258.¹³⁰ The bill shields municipalities from the responsibility of making PayGo payments. Specifically, the bill states, “that, as of fiscal year 2019-2020, the Municipalities shall not have any obligation to pay the “Pay as you Go,” either at the Collection Center for Municipal Revenues (CRIM), the obligation to remit payments for those fines.”¹³¹

¹³⁰ “Legislature Passes Bill to Free Municipal Governments from Pension, Health Plan Contributions,” *Reorg*, May 8, 2019, p. 1. *See also*, “Rossello Enacts Senate Bill 1258 Despite PROMESA Board Warning,” *Reorg*, May 17, 2019, p. 1.

¹³¹ Senate of Puerto Rico, P. of the S. 1258, April 30, 2019.

D. Summary

73. In addition to the risks associated with demographic changes that will reduce the projected benefits under PayGo over the remaining life of the ERS Bonds, there are risks associated with the entities that will be required to pay the PayGo fees. The Commonwealth of Puerto Rico remains financially challenged, not only from the debt and liabilities associated with its current financial crisis, but also from long term challenges associated with poverty, low growth, and an expected declining population. The certified fiscal plan of May 2019 seeks to reduce pension benefits accrued under ERS. Also, the financial condition of public corporations and municipalities pose additional risks, as evidenced by the failure of some to pay their PayGo invoices in full and the proposed reduction in the Commonwealth subsidies to the municipalities.

VII. MISCELLANEOUS

74. My work is ongoing and my opinions are subject to revision based on new information (including documentation, reports or testimony by other experts), which subsequently may be provided to, or obtained by, me.



By: _____
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Exhibit 1

FATEN SABRY, PHD **Managing Director** **Securities and Finance Practice Chair** **Bankruptcy Practice Chair**

I am a Managing Director and Chair of NERA’s Securities and Finance practice, as well as Chair of the Bankruptcy Practice. I have over twenty years of experience in economic and financial consulting in the valuation of fixed income securities, derivatives, illiquid assets, businesses and litigation settlements. I have consulted in disputes involving fraudulent conveyance, leveraged buyouts, distressed debt exchanges, solvency, and hedging strategies, among other issues. I have testified as an expert in State and Federal Courts.

Examples of my securities and bankruptcy work include: the valuation of illiquid securities in the bankruptcy proceedings of Novation Companies, Inc., the analysis of causation and damages related to structured notes, the valuation and damages analysis involving structured finance securities, including mortgage-backed securities (“MBS”) and collateralized debt obligations (“CDOs”), the analysis of the capital market reactions using credit default swaps to leveraged buyout transactions and the foreseeability of bankruptcy during the credit crisis. I also authored a study on the impact of a regulation change on the municipal securities market and have extensive experience in estimating contingent liabilities for reserves purposes.

I received my Ph.D. in Business from Stanford Business School and was awarded the J.M. Olin Graduate Fellowship, the Graduate School of Business Fellowship, and a Ford Foundation Fellowship. I received my BA, magna cum laude, and MA in economics from the American University in Cairo. My research has been published in the Journal of Structured Finance, Journal of Investment Compliance, Journal of Alternative Investments, Business Economics, International Trade Journal, and others. I have been accredited as a professional statistician by the American Statistics Association and am a member of the advisory board of VALCON. I am also a member of the American Bankruptcy Institute and the American Finance Association.

Education

- 1996** **Stanford University, Graduate School of Business**
Ph.D., Business
- 1991** **American University in Cairo, Egypt**
M.A., *magna cum laude*, Economics
- 1988** **American University in Cairo, Egypt**
B.A., *GPA 4.0*, Economics

Professional Experience

- 2010 -** **NERA Economic Consulting**
Managing Director
- 2002 – 2010** *Vice President*
- 2000 – 2002** *Senior Consultant*
- 1998 – 2000** *Consultant*
- 1997 - 1998** **American University in Cairo**
Assistant Professor of Economics
Taught graduate and undergraduate macroeconomics, economic development, and project valuation courses.
- 1997 - 1998** **International Food Policy Research Institute**
Post-Doctoral Fellow
Developed and estimated econometric almost ideal demand systems (AIDS) models for the demand for food commodities using a national survey data. Prepared a report on the subsidy system based on the results of the econometric analysis.
- 1991 - 1996** **Stanford University, Graduate School of Business**
Research and Teaching Assistant
Conducted statistical analysis for stochastic models of multi-party decision making. Designed a survey assessing moral responsibility of providing public goods in organizations. Developed case studies on the trade dispute between Fuji and Eastman Kodak. Also worked as a teaching assistant for graduate courses on negotiation and conflict resolution.

Honors and Professional Activities

- Post-Doctoral Fellow, International Food Policy Research, 1997.
- J. M. Olin Research Fellowship, Stanford Law School, 1995.
- Stanford University Graduate School of Business Fellowship, 1991-1996.

Ford Foundation Scholarship, 1990-1991.

Expert Reports, Deposition and Testimony

Deposition, in the United States District Court for the Southern District of New York, in *Phoenix Light SF Limited, et. al. v. the Bank of New York Mellon*, on alleged damages in a mortgage-backed securities case, 2019.

Expert Rebuttal Report, in the US District Court for the Southern District of New York, in *Phoenix Light SF Limited, et al. v The Bank of New York Mellon*, on causation and damages, 2018.

Trial Testimony, in the U.S. District Court for the Southern District of New York, in *U.S. Bank National Association v. Windstream Services, LLC v. Aurelius Capital Master, Ltd.*, related to the net benefits to bondholders from the debt exchanges and the impact of the exchanges on Windstream's leverage, 2018.

Affidavit, in the US District Court for the Southern District of New York, in *U.S. Bank National Association v. Windstream Services, LLC V. Aurelius Capital Master, Ltd.*, on the estimated net benefits provided to bondholders in a debt exchanged offered by the company, 2018.

Deposition, in the US District Court for the Southern District of New York, in *U.S. Bank National Association v. Windstream Services, LLC v. Aurelius Capital Master, Ltd.*, related to the net benefits to bondholders from the debt exchanges, 2018.

Expert Report and Rebuttal Expert Report, In the United States District Court for the Southern District of New York in *U.S. Bank National Association v. Windstream Services, LLC, v. Aurelius Capital Master, Ltd.* on the economic analysis of the net benefits received by Windstream bondholders in a purported debt exchange offered by the company, 2018.

Expert Report, In the United States District Court for the Southern District of New York, in *Phoenix Light SF Limited, et al. v. The Bank of New York Mellon*, on a statistical analysis of the performance of mortgage-backed securities, 2018.

Report, "Final Expert Calculation of Settlement Payment Pursuant to Settlement Agreement dated November 15, 2013," prepared on behalf of *U.S. Bank National Association, Bank of New York Mellon, Wilmington Trust, Wells Fargo, HSBC and Deutsche Bank as Trustees*, 2017.

Rebuttal Expert Report, Deposition Testimony and Rebuttal Expert Report, In the United States District Court for the Southern District of New York in *Royal Park Investments SA/NV, et al. v. The Bank of New York Mellon, as Trustee* on economic analysis of class certification issues, 2016-2017.

Expert Report, In the State of Minnesota District Court for the County of Hennepin, Fourth Judicial District in *Connie L. Gretsche, et al. v. CitiMortgage, Inc.* on the economic analysis of class certification in a consumer finance litigation, 2017.

Testimony and Expert Report, In the United States Bankruptcy Court for the District of Maryland – Baltimore Division, *In re: Novation Companies, Inc., et al. (Debtors)* on the valuation of illiquid fixed income securities and excess interest certificates with and without the exercise of optional termination, 2017.

Affidavit, In the Supreme Court of the State of New York for the County of New York in *Securitized Asset Funding 2011-2, Ltd. v. Canadian Imperial Bank of Commerce / Canadian Imperial Bank of Commerce v. Securitized Asset Funding 2011-2, Ltd. and Securitized Asset Funding 2009-1, Ltd., Promontoria Europe Investments XXIII LDC, and CSMC 2012-8R, Ltd.* on economic analysis of damages involving credit default swaps, 2017.

Expert Reports, In the Superior Court of Justice for the Province of Ontario in *John M. McIntosh v. Takata Corporation, TK Holdings Inc., Toyota Motor Corporation, Toyota Motor Manufacturing Canada Inc. and Toyota Motor Manufacturing, Indiana, Inc. / Rick A. Des-Rosiers and Stephen Kominar v. Takata Corporation, TK Holdings Inc., Honda Motor Co., Ltd., Honda of America Manufacturing, Inc. and Honda Canada* on economic analysis of class certification issues, 2016.

Deposition Testimony and Rebuttal Expert Report, In the United States District Court for the Southern District of New York in *Fixed Income Shares: Series M, et al. v. Citibank N.A.* on estimation of damages in an RMBS matter, 2016.

Declaration, In the United States District Court for the Southern District of New York in *The State of New York and The City of New York v. United Parcel Service, Inc.* on statistical analysis and estimation of damages, 2016.

Expert Report, In the United States District Court for the Southern District of New York in *The State of New York and The City of New York v. United Parcel Service, Inc.*, 2016.

Report regarding the allocable shares of the settlement trusts pursuant to the Settlement Agreement between The Bank of New York as Trustee for 530 Countrywide Mortgage-backed Securities Trusts, on the one hand, and Bank of America Corporation, Countrywide Home Loans and Bank of America on the other, prepared on behalf of The Bank of New York, January 2016.

Deposition Testimony, Rebuttal Report and Expert Report, In the Superior Court of the State of California In and For the City and County of San Francisco in *Federal Home Loan Bank of San Francisco v. Deutsche Bank Securities Inc., et al. / Federal Home Loan Bank of San Francisco v. Credit Suisse Securities (USA) LLC, et al.*, on a statistical analysis of the performance of mortgage backed certificates, July-October-December 2015.

Testimony, Rebuttal Expert Report and Expert Report, In the Matter of the Arbitration Before JAMS in *Sonova Holding AG, et al. v. Alfred E. Mann, individually, on behalf of the Mann Trust*,

and as Seller Representative, et al., on estimation of damages in an acquisition dispute, August-September-November 2015.

Affidavit, In the United States Bankruptcy Court for the District of Delaware, *In re: AgFeed USA, LLC, et al. (Debtors)* on the structure of the proposed settlement allocation, October 2014.

Report, “Economic Analysis of the Impact of the Amendments to Rule G-23 on the Municipal Securities Market” on the impact of the amendments to Rule G-23 which prevents financial advisors from switching roles in competitive municipal sales on the cost of borrowing for municipal issues, with special emphasis on small issuers, September 2014.

Expert Report, *In re: Proposed RMBS Settlement Agreement – November 15, 2013* on analysis of reasonableness of the RMBS settlement for Rep and Warranty breaches involving 330 JP Morgan Trusts, July 2014.

Deposition Testimony and Report (with Chudozie Okongwu), In the United States Bankruptcy Court for the Middle District of Florida – Orlando Division, *In re: Sherwood Investments Overseas Limited, Inc. (Debtor) / Sherwood Investments Overseas Limited, Inc. v. The Royal Bank of Scotland N.V., f/k/a ABN AMRO Bank, N.V.* on alleged causation and damages with regard to investments in certain equity derivative products, May-June 2014.

Testimony, Before the U.S. Department of Labor’s Hearings for the Proposed Rule on Occupational Exposure to Respirable Crystalline Silica, on an economic analysis of OSHA’s methodology to estimate the expected benefits of the proposed rule, *United States Chamber of Commerce Comments on U.S. Department of Labor’s Occupational Safety and Health Administration Proposed Rule on Occupational Exposure to Respirable Crystalline Silica*, Docket No. OSHA-2010-0034, Washington, DC, March 2014.

Comment on behalf of the US Chamber of Commerce in its submission to OSHA, *United States Chamber of Commerce Comments on U.S. Department of Labor’s Occupational Safety and Health Administration Proposed Rule on Occupational Exposure to Respirable Crystalline Silica*, Docket No. OSHA-2010-0034, Washington, DC, February 2014.

Deposition Testimony and Expert Report, In the United States District Court for the Western District of Wisconsin in *CMFG Life Insurance Company, CUMIS Insurance Society, Inc. and Members Life Insurance Company v. RBS Securities Inc.* on statistical analysis of materiality of alleged breaches in representations and warranties of several trusts, November 2013 & March 2014.

Deposition Testimony and Declaration, In the United States District Court for the Central District of California in *Securities and Exchange Commission v. Aletheia Research and Management, Inc., and Peter J. Eichler, Jr.*, on analysis of options trading, damages and disgorgement, February 2014.

Testimony, in the Supreme Court of the State of New York, County of New York in *The Bank of New York Mellon, et al. v. Walnut Place LLC, et al.* on a proposed RMBS settlement by Bank of America, September 2013.

Declaration, In the United States District Court for the Central District of California, Western Division, *In Re: CitiMortgage, Inc. Home Affordable Modification Program ("HAMP") Litigation* on economic analysis of class certification in the MDL litigation involving mortgage borrowers who applied for the HAMP modification program, August 2013.

Deposition Testimony, In the United States District Court for the Central District of California, Western Division, *In Re: CitiMortgage, Inc. Home Affordable Modification Program ("HAMP") Litigation* on economic analysis of class certification in the MDL litigation involving mortgage borrowers who applied for the HAMP modification program, June 2013.

Expert Report, In the United States District Court for the Central District of California, Western Division, *In Re: CitiMortgage, Inc. Home Affordable Modification Program ("HAMP") Litigation* on economic analysis of class certification in the MDL litigation involving mortgage borrowers who applied for the HAMP modification program, May 2013.

Expert Report, In the Superior Court of Justice for the Province of Ontario in *Edward Selmani, et al. v. Toyota Canada Inc. and Toyota Motor Corporation, et al.* on economic analysis of class certification and analysis of diminution of value in Toyota's product recall litigation, May 2013.

Affidavit and Declaration, in the matter of *Michael Melley v. Toyota Canada Inc. and Toyota Motor Corporation*, Superior Court of the Province of Québec, District of Montréal, on economic analysis of diminution of value and class certification issues, April 2013.

Testimony, in the Supreme Court of the State of New York, County of New York in *IDX Capital, LLC, et al. v. Phoenix Partners Group LLC, et al.* on the fair market value of a CDS inter-dealer broker firm, December 2012.

Deposition Testimony, in the Supreme Court of the State of New York, County of New York in *The Bank of New York Mellon, et al. v. Walnut Place LLC, et al.* on a proposed RMBS settlement by Bank of America, December 2012.

Testimony in a FINRA Disciplinary Proceeding, *Department of Enforcement v. Brookstone Securities, Inc., et al.*, regarding collateralized mortgage obligations, including inverse floating-rate and interest-only tranches, and the impact of changes in the yield curve during the period 2004 to 2007 on the value of the securities, February 2012.

Expert Report, in the matter of *Ryan Schachter v. Toyota Canada Inc. and Toyota Motor Corporation*, Superior Court of the Province of Québec, District of Montréal, on economic analysis of class certification, October 2011.

Trial Testimony in the Supreme Court of the State of New York, County of New York, in *Jet Acceptance Corporation v. Quest Mexicana, S.A. de C.V. and Lomas Group S.A. de C.V.*, on the estimation of damages and the use of discount rates, September 2011.

Rebuttal Affidavit on behalf of defendants, *IDX Capital LLC, et al. v. Phoenix Partners Group LLC, et al.* Index No. 102806-07 (Supreme Court of the State of New York). The rebuttal affidavit analyzed the revenue projections of a credit default swaps inter-dealer broker (IDB), January 2011.

Expert Report in a FINRA Disciplinary Proceeding, *Department of Enforcement v. Brookstone Securities, Inc., et al.*, on representations made to customers regarding CMOs, inverse floaters and IOs and examined the impact of changes in the interest rates environment and other market factors during the period 2004 to 2007, January 2011.

Affidavit on behalf of defendants, in the Supreme Court of the State of New York, County of New York, in *IDX Capital LLC, et al. v. Phoenix Partners Group LLC, et al.*, on the revenue projections of a credit default swaps inter-dealer broker (IDB), December 2010.

Testimony, in the United States District Court for the Northern District of Illinois Eastern Division, in *Potash Corporation of Saskatchewan Inc. v. BHP Billiton LTD, et al.*, on economic issues related to the materiality of alleged violations of Section 14(e) of the Securities Exchange Act of 1934 in connection with a hostile tender offer, October, 2010. Dr. Sabry testified on the use of econometric and content analyses to assess the impact of alleged misrepresentations in the tender offer on the market value of the target company, November 4, 2010.

Deposition Testimony, in the United States District Court for the Northern District of Illinois Eastern Division, in *Potash Corporation of Saskatchewan Inc. v. BHP Billiton LTD, et al.*, on economic issues related to materiality of alleged violations of Section 14(e) of the Securities Act of 1934 in connection with a hostile tender offer, October 2010.

Rebuttal Report, in the United States District Court for the Northern District of Illinois Eastern Division, in *Potash Corporation of Saskatchewan Inc. v. BHP Billiton LTD, et al.*, on economic issues related to materiality of alleged violations of Section 14 (e) of the Securities Act of 1934 in connection with a hostile tender offer, October 2010.

Expert Report, in the United States District Court for the Northern District of Illinois Eastern Division, in *Potash Corporation of Saskatchewan Inc. v. BHP Billiton LTD, et al.*, on issues related to materiality, regression models, event studies and alleged violations of Section 14(e) in connection with a hostile tender offer, October 2010.

Declaration in the *Official Committee of Unsecured Creditors v. Citibank et al., re Lyondell Chemical Companies et al*, United States Bankruptcy Court, Southern District of New York (Joint Declaration with Ramsey Shehadeh and Jeff Baliban). An analysis of the capital market reactions including credit default swaps to the LBO and the foreseeability of bankruptcy during the credit crisis, December 2009.

Econometric Study titled, “The Impact of Securitization on Consumers, Investors, Financial Institutions, and the Capital Markets,” (with Chudozie Okongwu), report commissioned by the American Securitization Forum. The study examines the impact of securitization on mortgages, auto loans, credit cards and other loans before and after the credit crisis, June 2009.

Trial Testimony on behalf of the defense in the Supreme Court of New York State, County of Orange, in *Cynthia Hoogland, et al. v. Transport Expressway, Inc. et al.*, regarding the analysis of damages and the projection of economic losses suffered by the plaintiffs’ decedent including the valuation of shadow stocks, 401K plan and other assets, August 2008.

Report for the Village of Tinley Park, IL, on econometric analysis of the economic impact of municipal smoking bans on local businesses, March 2007.

Trial Testimony on behalf of plaintiffs in the Supreme Court of New York State, County of New York, in *Barbara Jiggetts, et al. v. Michael Dowling, As Commissioner of New York State Department of Social Services*, on econometric analysis of rents and vacancies in New York City and rebuttal of opposing expert’s econometric model of the housing market used to determine housing allowances in New York City, March 2007.

Expert Report on behalf of plaintiffs in *Barbara Jiggetts, et al. v. Michael Dowling, As Commissioner of New York State Department of Social Services*, on statistical analysis of rents and vacancies in New York City and rebuttal of opposing expert’s econometric model of the housing market for low income families in New York City, March 2007.

Report on behalf of defendants in the United States District Court for the District of Utah – Central Division in *American Investment Bank, N.A., et al., v. Systems & Service Technologies, Inc. and JP Morgan Chase Bank* on analysis of servicers’ loan-level data to assess the allegations related to servicing and performance of loans, May 2006.

Affidavit on behalf of plaintiffs in *Barbara Jiggetts, et al. v. Michael Dowling, As Commissioner of New York State Department of Social Services*, on a statistical analysis of rents and housing subsidies for low income families in New York City, July 2005.

Affidavit on behalf of plaintiffs in *Barbara Jiggetts et al. v. Michael Dowling, As Commissioner of the New York State Department of Social Services*, on rebuttal of econometric analysis of the housing market for low income families in New York City, September 2004.

Publications

“What Does the CFPB Complaints Database Tell Us About the Quality of Servicing of Student Loans?” (with Ignacio Franceschelli and David Cen), NERA Working Paper, December 2017.

“Not All MBS Settlements Are Equal,” (with Sungi Lee and Linh Nguyen), *NERA Insights: Subprime Lending Series, Part XII*, June 2017 (Republished in *Law360* as “Trends In Credit Crisis Settlements,” September 18, 2017).

“Home Equity, Home Value, and Determinants of Mortgage Defaults During the Credit Crisis,” (with Drew Claxton and Ignacio Franceschelli), *Journal of Real Estate Practice and Education*, Vol. 19, No. 2, 2016.

“Mortgage Defaults, Foreclosures and Modifications,” (with Drew Claxton and Ignacio Franceschelli), in the *Handbook of Mortgage-Backed Securities, 7th Edition*, Frank J. Fabozzi (ed.), Oxford University Press, 2016.

“What do the new risk retention requirements of the Dodd-Frank Act mean for securitisation?,” *Financial Regulation International*, Issue 18.5, June 2015.

“Credit Crisis Litigation Update: Significant Settlement Activity in 2014 and New Cases against RMBS Trustees and Mortgage Lenders,” (with Sungi Lee, Joseph Mani and Linh Nguyen), NERA Working Paper, February 2015.

“An Economist’s View of Market Evidence in Valuation and Bankruptcy Litigation,” (with William Hrycay), NERA Working Paper, May 2014 (Republished in *Law360* as “Market Evidence In Solvency Disputes—An Economist’s View,” July 1, 2014, and republished by Harvard Law School Forum on Corporate Governance and Financial Regulation; website link <http://blogs.law.harvard.edu/corpgov/>).

“The Use of ABX in Credit Crisis Litigation,” *Journal of Structured Finance*, Vol. 19, No. 4, Winter 2014.

“Credit Crisis Litigation Update: It is Settlement Time,” (with Eric Wang and Joseph Mani), NERA Working Paper, October 2013. (Republished by Harvard Law School Forum on Corporate Governance and Financial Regulation; website link <http://blogs.law.harvard.edu/corpgov/>).

“Comcast and Economic Analysis of Class Certification Issues,” (with Drew Claxton), NERA Working Paper, July 2013.

“The Use of ABX Derivatives in the Credit Crisis Litigation,” (with Ethan Cohen-Cole) *NERA Insights: Subprime Lending Series*, January 2012.

“What Do the New Risk Retention Requirements of the Dodd-Frank Act Mean for Securitization?” *NERA Insights: Impact of the New Financial Regulations Series, Part III*, December 2010.

“Credit Crisis Litigation Revisited: Litigating the Alphabet of Structured Products,” (with Anmol Sinha, Jesse Mark, and Sungi Lee) *NERA Insights: Subprime Lending Series, Part VII*, June 2010.

“An Update on the Credit Crisis Litigation: A Turn Towards Structured Products and Asset Management Firms,” (with Anmol Sinha and Sungi Lee) *NERA Insights: Subprime Lending Series, Part VI*, June 2009.

“How Did We Get Here? The Story of the Credit Crisis,” (with Chudozie Okongwu), *Journal of Structured Finance*, Spring 2009.

“The Use of Economic Analysis in Predatory Lending Cases: Application to Subprime Loans,” (with Denise Martin and Stephanie Plancich) *NERA Insights: Subprime Lending Series, Part IV*, June 2009.

“Trends in the Subprime Securities Litigation,” (with Anmol Sinha and Sungi Lee), *Journal of Alternative Investments*, Fall 2008.

“Subprime Securities Litigation: Key Players, Rising Stakes, and Emerging Trends,” (with Anmol Sinha and Sungi Lee), *NERA Insights: Subprime Lending Series, Part III*, July 2008.

“The Subprime Meltdown: A Primer,” (with Tom Schopflocher), *US Subprime Market: Evolution, Growth and Crisis*, Icfai University Press, July 2008.

“When Do Breakpoints Give Mutual Fund Investors a Break?” (with Winai Wongsurawat), *Journal of Investment Compliance*, Volume 9, Issue 2, April 2008.

“Subprime Litigation: The Opening Salvo,” (with Anmol Sinha and Sungi Lee), *Tort Source*, Vol. 10 Issue No. 3, Spring 2008.

“The Subprime Meltdown: Not Again!” (with Tom Schopflocher), *American Bankruptcy Institute Journal*, Vol. XXVI, No. 7, September 2007.

“The Propensity to Sue: Why Do People Seek Legal Actions?” (with SEC Economic Fellow Fred Dunbar), *Business Economics*, April 2007.

“The Subprime Meltdown: A Primer,” (with Tom Schopflocher), *NERA Insights: Subprime Lending Series, Part I*, June 2007.

“Forecasting Claims in an Era of Tort Reform,” (with SEC Economic Fellow Fred Dunbar), *LNJ's Product Liability Newsletter*, November/December 2004.

“The Development and Effectiveness of the WTO's Dispute Settlement Body,” *MSU-Journal of International Law*, Volume 10, Issue #3, Fall 2001.

“An Analysis of the Decision to File, the Dumping Margin and the Outcome of Antidumping Petitions,” *The International Trade Journal*, Volume XIV, No. 2, Summer 2000.

Recent Presentations

“How Do Market Efficiency and Market Evidence Factor in Valuation Disputes?,” prepared for *VALCON 2019*, hosted by the American Bankruptcy Institute (ABI): Las Vegas, NV, February 2019.

“2018 Trends in Securities Litigation”, presentation hosted by *FINPRO Global Advisory Board*, New York, NY, February 2019.

“Expert Witness 2018”, panel presentation hosted at the *Practicing Law Institute (PLI)*: New York, NY, June 2018.

“Navigating Issues in Fraudulent Transfers,” presented at *VALCON 2018: Cutting Edge Valuation Solutions*, hosted by the American Bankruptcy Institute (ABI): Las Vegas, NV, May 2018.

“Puerto Rico Restructuring Crisis as Compared to Detroit,” ABA Section of Litigation Roundtable Webinar (moderator), November 2017.

“Economic Analysis of Plan Feasibility and Capital Adequacy,” presented on Bankruptcy Litigation panel at *American Bankruptcy Institute New York City Bankruptcy Conference 2017*, New York, NY, May 2017.

“Shorting Credit Default Swaps,” *NERA’s 16th Securities & Finance Summer Seminar*, Park City, UT, July 2016.

“Arbitration in the MENA Region,” panel discussions at Hogan Lovells lecture series *International Arbitration in the MENA Region*, New York and Washington, June 2016.

“Use of Derivatives and Probabilistic Methods in Bankruptcy, Workouts and Insolvency Matters,” presented at *VALCON 2016: Emerging Valuation Issues in Bankruptcy and Beyond*, hosted by the American Bankruptcy Institute (ABI): Las Vegas, NV, March 2016.

“Expert Reports and Depositions,” Practising Law Institute, *Expert Witness 2015 Program*, New York, NY, June 2015.

Economic Issues in Class Actions, presented at *Class Action Litigation Conference*, panel titled “Trying Class Actions – Strategic and Practical Approaches,” Perrin Conferences, Chicago, IL, May 2015.

“Valuation Adjustment – The Economics of the Cost of Capital for Distressed Companies,” *VALCON 2015: Emerging Valuation Issues in Bankruptcy and Beyond*, hosted by the American Bankruptcy Institute (ABI): Las Vegas, NV, February 2015.

“Economic Analysis of Risk Retention Under Dodd Frank,” webcast hosted by *The Knowledge Group*, October 2014.

“Argentina Debt Litigation: Sovereign Debt Restructuring Going Forward,” webcast hosted by Thomson Reuters, September 2014.

“Hot Topics in Bankruptcy Litigation,” webcast hosted by West LegalEdcenter in conjunction with NERA Economic Consulting, April 2013.

“Valuation Issues in Bankruptcy Litigation,” presented at the Practising Law Institute’s Webcast on Valuation and Bankruptcy Litigation, New York, NY, December 2012.

“Asset-backed Securitizations—What Happened?,” presented at *Understanding Mortgage-Backed Securities*, hosted by the Southern District of New York Chapter and Securities Law Section of the Federal Bar Association: New York, NY, March 2012.

“The Economics of CDO Litigation,” presented at *NERA’s Financial Litigation, Disputes, and Enforcement Seminar*, London, United Kingdom, October 2011.

“The Impact of the New Risk Retention Rules on Securitization: Examining Economic Issues in Financial Regulation under Dodd-Frank,” presented at the SEC Historical Society, July 2011.

“Trends in the Credit Crisis Litigation,” presented at *New York University Roundtable on the Securities Litigation in the Aftermath of the Crisis: What Happened in 2010 and What Lies Ahead?* Hosted by the New York University Vincent C. Ross Institute of Accounting Research and NERA: New York, NY, February 2011.

“Recent Trends in Regulation, Enforcement, and Litigation of the Credit Crisis,” presented at the *13th Finance, Law and Economics Securities Litigation Seminar*, sponsored by NERA Economic Consulting, Jackson Hole, WY, July 2010.

“ABS and Financial Reform: Evaluating the Impact of New and Proposed Regulatory Changes on Investors and Issuers,” presented at the *IQPC Asset-Backed Securities Summit*, New York, NY, June 2010.

“What Kind of Damages are Being Sought and How Will Damages be Measured?” presented at the HB Litigation conference on *Insurance Coverage Litigation Arising Out of the Financial Crisis: What Policyholders and Carriers Need to Know*, New York, NY, March 2009.

“The Use of Econometrics to Analyze Liability and Damages,” presented at the Northwestern University, Judicial Education Program, Advanced Law and Economics Institute, *Quantitative Methods-Statistics and Econometrics Seminar*, New York, NY, March 2009.

“Litigating the Credit Crisis: What You Need to Know About Subprime, Structured Products, and Current Litigation,” presented at the *Directors Roundtable*, CLE Program, New York, NY, February 2009.

“A Primer on Credit Default Swaps,” presented to the *Committee on Securities & Exchanges*, New York County Lawyer’s Association, Bingham McCutcheon, New York, NY, January 2009.

Exhibit 2. Materials Considered

Court and Administrative Documents:

- “Adversary Complaint,” The Financial Oversight And Management Board For Puerto Rico, v. Altair Global Credit Opportunities Fund (A), LLC, et al. Case No. 17-00213-LTS, filed July 21, 2017.
- “Agreement Among Underwriters - Instructions, Terms and Acceptance,” UBS Financial Services Incorporated of Puerto Rico, May 27, 2008.
- “Amended and Supplemented Complaint,” Altair Global Credit Opportunities Fund (A), LLC., et al., v. The United States of America, Case No. 1:17-cv-00970-SGB, filed October 31, 2017.
- “Brief Of Amicus Curiae Financial Oversight And Management Board For Puerto Rico In Support Of Respondents-Appellees Urging Affirmance Of The District Court Order,” Peaje Investments LLC., v. Alejandro Garcia-Padilla, et al. Case No. 16-2433, filed December 23, 2016.
- “Certificate as to Resolution 8872,” Board of Directors of GDB, May 27, 2008.
- “Certificate of Secretary of the System as to Amended and Restated Purchase Contract,” January 31, 2008.
- “Certificate of Secretary of the System as to Master Continuing Disclosure Agreement,” January 31, 2008.
- “Certificate of Secretary of the System as to Master Continuing Disclosure Agreement,” June 2, 2008.
- “Certificate of Secretary of the System as to Purchase Contract,” June 2, 2008.
- “Certificate of Secretary of the System as to Security Agreement,” January 31, 2008.
- “Certificate of Secretary of the System as to Security Agreement,” June 2, 2008.
- “Certificate of Secretary of the System as to the Preliminary Official Statement,” January 31, 2008.
- “Certification as to Resolution 8798,” January 24, 2008.
- “Certification as to Resolution EC-1671,” January 29, 2008.
- “Certification for Act No. 69,” January 31, 2008.
- “Certification of Acting General Counsel of Government Development Bank with Respect to No Adverse Legislation,” January 31, 2008.
- “Certification of Resolution No. 2008-02,” January 24, 2008.
- “Certification of Resolution No. 2008-03,” January 24, 2008.
- “Certification of Resolution No. 2008-03,” Puerto Rico Public Employees Retirement System Board of Trustees, January 24, 2008.
- “Certification of Resolution No. 2008-04,” January 24, 2008.
- “Certification of Resolution No. 2008-05,” January 24, 2008.
- “Certification of Resolution No. 2008-06,” January 24, 2008.
- “Certification of Resolution No. 2008-11,” Puerto Rico Public Employees Retirement System Board of Trustees, May 27, 2008.
- “Collateral Certificate,” Commonwealth of Puerto Rico - The Secretary of State, June 2, 2008.
- “Declaration of Luis M. Collazo-Rodriguez in Support of Objection of the Employees Retirement System to Motion for Lift of Stay Filled by the Cooperativa de Ahorro y Credito Vegabojena and in Compliance with Order ECF No. 4194,” Cooperativa de Ahorro y Credito Vegabojena v. The Financial Oversight and Management Board for Puerto Rico. Case No. 17-03283-LTS, November 15, 2018.
- “Declaration of Sparkle L. Sooknunan in Support of ERS Bondholders' Motion for Relief from the Automatic Stay,” Case No. 17-03566-LTS, August 3, 2018.
- “Employee Retirement System of the Government of the Commonwealth of Puerto Rico - First Supplemental Pension Funding Bond Resolution authorizing Senior Pension Funding Bonds Series A,” January 29, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico - Second Supplemental Pension Funding Bond Resolution authorizing Senior Pension Funding Bonds Series B,” May 27, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico - Series A Senior Pension Funding Bond Resolution,” January 24, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico - Series B Senior Pension Funding Bond Resolution,” January 24, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico - Series C Senior Pension Funding Bonds,” June 30, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico Senior Pension Funding Bond Series A,” Bond Certificate, January 31, 2008.
- “Employees Retirement System of the Government of the Commonwealth of Puerto Rico Senior Pension Funding Bond Series B,” Bond Certificate, June 2, 2008.
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Exhibit 2. Materials Considered

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- ERS_LS0002009 - 0002010.

Exhibit 2. Materials Considered

- ERS_LS0002011 - 0002012.
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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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Exhibit 2. Materials Considered

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- ERS_LS0004920 - 0004923.
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- ERS_LS0004926 - 0004927.
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- ERS_LS0004970 - 0004971.
- ERS_LS0004972 - 0004975.
- ERS_LS0004976 - 0004979.
- ERS_LS0004980 - 0004981.
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- ERS_LS0004986 - 0004987.
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- ERS_LS0004990 - 0004991.
- ERS_LS0004992 - 0004993.
- ERS_LS0004994 - 0004995.
- ERS_LS0004996 - 0004997.
- ERS_LS0004998 - 0004999.
- ERS_LS0005000 - 0005001.
- ERS_LS0005002 - 0005003.
- ERS_LS0005004 - 0005005.
- ERS_LS0005006 - 0005007.
- ERS_LS0005008 - 0005009.
- ERS_LS0005010 - 0005011.
- ERS_LS0005012 - 0005013.
- ERS_LS0005014 - 0005015.

Exhibit 2. Materials Considered

- ERS_LS0005016 - 0005017.
- ERS_LS0005018 - 0005019.
- ERS_LS0005020 - 0005021.
- ERS_LS0005022 - 0005023.
- ERS_LS0005024 - 0005025.
- ERS_LS0005026 - 0005027.
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- ERS_LS0005042 - 0005043.
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- ERS_LS0005046 - 0005047.
- ERS_LS0005048 - 0005049.
- ERS_LS0005050 - 0005051.
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- ERS_LS0005053 - 0005055.
- ERS_LS0005056 - 0005065.
- ERS_LS0005066 - 0005067.
- ERS_LS0005068 - 0005104.
- ERS_LS0005105 - 0005118.
- ERS_LS0005119 - 0005166.
- ERS_LS0005167 - 0005203.
- ERS_LS0005204 - 0005281.
- ERS_LS0005282 - 0005283.
- ERS_LS0005284 - 0005325.
- ERS_LS0005326 - 0005397.
- ERS_LS0005398 - 0005453.
- ERS_LS0005454 - 0005497.
- ERS_LS0005498 - 0005507.
- ERS_LS0005508 - 0005509.
- ERS_LS0005510 - 0005513.
- ERS_LS0005514 - 0005555.
- ERS_LS0005556.
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- ERS_LS0005558 - 0005625.
- ERS_LS0005626 - 0005627.
- ERS_LS0005628 - 0005699.
- ERS_LS0005700 - 0005776.
- ERS_LS0005777 - 0005853.
- ERS_LS0005854 - 0005922.
- ERS_LS0005923 - 0005990.
- ERS_LS0005991 - 0006062.
- ERS_LS0006063 - 0006066.
- ERS_LS0006067 - 0006070.
- ERS_LS0006071 - 0006110.
- ERS_LS0006111 - 0006182.
- ERS_LS0006183 - 0006230.
- ERS_LS0006231.
- ERS_LS0006232 - 0006234.
- ERS_LS0006235 - 0006236.
- ERS_LS0006237 - 0006241.
- ERS_LS0006242.
- ERS_LS0006243.

Exhibit 2. Materials Considered

- ERS_LS0006244 - 0006258.
- ERS_LS0006259.
- ERS_LS0006260.
- ERS_LS0006261.
- ERS_LS0006262 - 0006338.
- ERS_LS0006339 - 0006340.
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- ERS_LS0006343 - 0006344.
- ERS_LS0006345 - 0006384.
- ERS_LS0006385 - 0006424.
- ERS_LS0006425 - 0006426.
- ERS_LS0006427.
- ERS_LS0006428.
- ERS_LS0006429 - 0006496.
- ERS_LS0006497 - 0006506.
- ERS_LS0006507 - 0006550.
- ERS_LS0006551 - 0006606.
- ERS_LS0006607 - 0006610.
- ERS_LS0006611 - 0006614.
- ERS_LS0006615 - 0006654.
- ERS_LS0006655 - 0006702.
- ERS_LS0006703 - 0006750.
- ERS_LS0006751 - 0006790.
- ERS_LS0006791 - 0006838.
- ERS_LS0006839 - 0006842.
- ERS_LS0006843 - 0006852.
- ERS_LS0006853 - 0006908.
- ERS_LS0006909 - 0006952.
- ERS_LS0006953 - 0007000.
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- ERS_LS0007123 - 0007126.
- ERS_LS0007127 - 0007170.
- ERS_LS0007171 - 0007180.
- ERS_LS0007181 - 0007236.
- ERS_LS0007237 - 0007240.
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- ERS_LS0007258 - 0007261.
- ERS_LS0007262 - 0007305.
- ERS_LS0007306 - 0007361.
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- ERS_LS0007372 - 0007377.
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- ERS_LS0007427 - 0007484.
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- ERS_LS0007499 - 0007542.
- ERS_LS0007543 - 0007598.
- ERS_LS0007599 - 0007600.
- ERS_LS0007601 - 0007603.
- ERS_LS0007604 - 0007606.
- ERS_LS0007607 - 0007664.
- ERS_LS0007665 - 0007713.
- ERS_LS0007714 - 0007786.
- ERS_LS0007787 - 0007827.
- ERS_LS0007828 - 0007868.
- ERS_LS0007869 - 0007941.
- ERS_LS0007942 - 0007982.

Exhibit 2. Materials Considered

- ERS_LS0007983 - 0008055.
- ERS_LS0008056 - 0008057.
- ERS_LS0008058 - 0008059.
- ERS_LS0008060 - 0008061.
- ERS_LS0008062 - 0008119.
- ERS_LS0008120 - 0008168.
- ERS_LS0008169 - 0008172.
- ERS_LS0008173 - 0008176.
- ERS_LS0008177.
- ERS_LS0008178 - 0008184.
- ERS_LS0008185 - 0008190.
- ERS_LS0008191 - 0008197.
- ERS_LS0008198 - 0008202.
- ERS_LS0008203 - 0008208.
- ERS_LS0008209 - 0008214.
- ERS_LS0008215 - 0008220.
- ERS_LS0008221 - 0008227.
- ERS_LS0008228 - 0008232.
- ERS_LS0008233 - 0008238.
- ERS_LS0008239 - 0008243.
- ERS_LS0008244 - 0008248.
- ERS_LS0008249 - 0008252.
- ERS_LS0008253 - 0008255.
- ERS_LS0008256 - 0008258.
- ERS_LS0008259 - 0008262.
- ERS_LS0008263.
- ERS_LS0008264 - 0008267.
- ERS_LS0008268 - 0008270.
- ERS_LS0008271 - 0008274.
- ERS_LS0008275.
- ERS_LS0008276.
- ERS_LS0008277.
- ERS_LS0008278.
- ERS_LS0008279.
- ERS_LS0008280.
- ERS_LS0008281 - 0008322.
- ERS_LS0008323 - 0008325.
- ERS_LS0008326 - 0008329.
- ERS_LS0008330 - 0008331.
- ERS_LS0008332 - 0008334.
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- ERS_LS0008336 - 0008340.
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- ERS_LS0008343 - 0008346.
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- ERS_LS0008353 - 0008356.
- ERS_LS0008357 - 0008405.
- ERS_LS0008406 - 0008463.
- ERS_LS0008464.
- ERS_LS0008465 - 0008467.
- ERS_LS0008468 - 0008525.
- ERS_LS0008526 - 0008574.
- ERS_LS0008575 - 0008578.
- ERS_LS0008579 - 0008584.

Exhibit 2. Materials Considered

- ERS_LS0008585 - 0008587.
- ERS_LS0008588 - 0008592.
- ERS_LS0008593 - 0008597.
- ERS_LS0008598 - 0008602.
- ERS_LS0008603 - 0008607.
- ERS_LS0008608 - 0008655.
- ERS_LS0008656 - 0008660.
- ERS_LS0008661 - 0008664.
- ERS_LS0008665 - 0008712.
- ERS_LS0008713 - 0008722.
- ERS_LS0008723 - 0008770.
- ERS_LS0008771 - 0008818.
- ERS_LS0008819.
- ERS_LS0008820 - 0008821.
- ERS_LS0008822.
- ERS_LS0008823 - 0008832.
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- ERS_LS0008836 - 0008838.
- ERS_LS0008839 - 0008848.
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- ERS_LS0008852 - 0008861.
- ERS_LS0008862 - 0008871.
- ERS_LS0008872 - 0008874.
- ERS_LS0008875 - 0008884.
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- ERS_LS0008891 - 0008900.
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- ERS_LS0008904 - 0008913.
- ERS_LS0008914 - 0008922.
- ERS_LS0008923 - 0008932.
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- ERS_LS0008986 - 0008988.
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- ERS_LS0009016 - 0009023.
- ERS_LS0009024 - 0009030.
- ERS_LS0009031 - 0009037.
- ERS_LS0009038 - 0009042.
- ERS_LS0009043 - 0009049.
- ERS_LS0009050 - 0009055.
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- ERS_LS0009065 - 0009073.
- ERS_LS0009074 - 0009081.
- ERS_LS0009082 - 0009090.
- ERS_LS0009091 - 0009099.
- ERS_LS0009100 - 0009108.
- ERS_LS0009109.
- ERS_LS0009110 - 0009112.
- ERS_LS0009113 - 0009122.
- ERS_LS0009123 - 0009125.

Exhibit 2. Materials Considered

- ERS_LS0009126 - 0009135.
- ERS_LS0009136.
- ERS_LS0009137 - 0009142.
- ERS_LS0009143 - 0009148.
- ERS_LS0009149 - 0009154.
- ERS_LS0009155 - 0009159.
- ERS_LS0009160 - 0009164.
- ERS_LS0009165 - 0009168.
- ERS_LS0009169 - 0009170.
- ERS_LS0009171 - 0009174.
- ERS_LS0009175.
- ERS_LS0009176 - 0009212.
- ERS_LS0009213.
- ERS_LS0009214 - 0009261.
- ERS_LS0009262 - 0009271.
- ERS_LS0009272 - 0009281.
- ERS_LS0009282 - 0009283.
- ERS_LS0009284 - 0009298.
- ERS_LS0009299 - 0009300.
- ERS_LS0009301 - 0009302.
- ERS_LS0009303 - 0009317.
- ERS_LS0009318 - 0009319.
- ERS_LS0009320 - 0009324.
- ERS_LS0009325 - 0009334.
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- ERS_LS0009356 - 0009358.
- ERS_LS0009359 - 0009360.
- ERS_LS0009361 - 0009362.
- ERS_LS0009363 - 0009365.
- ERS_LS0009366.
- ERS-AAFAF_LS0000001 - 0000048.
- ERS-AAFAF_LS0000049 - 0000052.
- ERS-AAFAF_LS0000053 - 0000056.
- ERS-AAFAF_LS0000057 - 0000059.
- ERS-AAFAF_LS0000060 - 0000062.
- ERS-AAFAF_LS0000063 - 0000078.
- ERS-AAFAF_LS0000079 - 0000080.
- ERS-AAFAF_LS0000081 - 0000083.
- ERS-AAFAF_LS0000083.
- ERS-AAFAF_LS0000084.
- ERS-AAFAF_LS0000085 - 0000156.
- ERS-AAFAF_LS0000157 - 0000220.
- ERS-AAFAF_LS0000221 - 0000262.
- ERS-AAFAF_LS0000263 - 0000339.
- ERS-AAFAF_LS0000340.
- ERS-AAFAF_LS0000341.
- ERS-AAFAF_LS0000342.
- ERS-AAFAF_LS0000343 - 0000475.
- ERS-AAFAF_LS0000476 - 0000775.
- ERS-AAFAF_LS0000776 - 0001138.
- ERS-AAFAF_LS0001139.
- ERS-AAFAF_LS0001140 - 0001146.
- ERS-AAFAF_LS0001147.

Exhibit 2. Materials Considered

- ERS-AAFAF_LS0001148 - 0001277.
- ERS-AAFAF_LS0001278.
- ERS-AAFAF_LS0001279.
- ERS-AAFAF_LS0001280.
- ERS-AAFAF_LS0001281.
- ERS-AAFAF_LS0001284.
- ERS-AAFAF_LS0001308 - 0001309.
- ERS-AAFAF_LS0001310 - 0001311.
- ERS-AAFAF_LS0001312 - 0001315.
- ERS-AAFAF_LS0001316 - 0001319.
- ERS-AAFAF_LS0001320.
- ERS-AAFAF_LS0001321 - 0001326.
- ERS-AAFAF_LS0001327 - 0001332.
- ERS-AAFAF_LS0001333 - 0001375.
- ERS-AAFAF_LS0001376 - 0001420.
- ERS-AAFAF_LS0001421 - 0001464.
- ERS-AAFAF_LS0001465 - 0001505.
- ERS-AAFAF_LS0001506 - 0001507.
- ERS-AAFAF_LS0001508 - 0001513.
- ERS-AAFAF_LS0001514 - 0001519.
- ERS-AAFAF_LS0001520 - 0001521.
- ERS-AAFAF_LS0001522.
- ERS-AAFAF_LS0001523 - 0001524.
- ERS-AAFAF_LS0001525 - 0001526.
- ERS-AAFAF_LS0001527 - 0001528.
- ERS-AAFAF_LS0001529 - 0001530.
- ERS-AAFAF_LS0001531.
- ERS-AAFAF_LS0001532.
- ERS-AAFAF_LS0001533.
- ERS-AAFAF_LS0001534 - 0001535.
- ERS-AAFAF_LS0001536 - 0001538.
- ERS-AAFAF_LS0001539 - 0001541.
- ERS-AAFAF_LS0001542 - 0001543.
- ERS-AAFAF_LS0001544 - 0001546.
- ERS-AAFAF_LS0001547.
- ERS-AAFAF_LS0001548 - 0001549.
- ERS-AAFAF_LS0001550 - 0001551.
- ERS-AAFAF_LS0001552.
- ERS-AAFAF_LS0001553 - 0001554.
- ERS-AAFAF_LS0001555 - 0001557.
- ERS-AAFAF_LS0001558 - 0001566.
- ERS-AAFAF_LS0001567 - 0001575.
- ERS-AAFAF_LS0001576 - 0001577.
- ERS-AAFAF_LS0001578 - 0001579.
- ERS-AAFAF_LS0001580 - 0001588.
- ERS-AAFAF_LS0001589 - 0001592.
- ERS-AAFAF_LS0001593 - 0001624.
- ERS-AAFAF_LS0001625 - 0001656.
- ERS-AAFAF_LS0001657 - 0001686.
- ERS-AAFAF_LS0001687 - 0001693.
- ERS-AAFAF_LS0001694 - 0001697.
- ERS-AAFAF_LS0001698 - 0001700.
- ERS-AAFAF_LS0001701.
- ERS-AAFAF_LS0001702.
- ERS-AAFAF_LS0001703.
- ERS-AAFAF_LS0001704.
- ERS-AAFAF_LS0001705 - 0001706.

Exhibit 2. Materials Considered

- ERS-AAFAF_LS0001707 - 0001790.
- ERS-AAFAF_LS0001791 - 0001871.
- ERS-AAFAF_LS0001872 - 0001952.
- ERS-AAFAF_LS0001953 - 0001984.
- ERS-AAFAF_LS0001985 - 0001987.
- ERS-AAFAF_LS0001988.
- ERS-AAFAF_LS0001989 - 0001991.
- ERS-AAFAF_LS0001992 - 0001994.
- ERS-AAFAF_LS0001995 - 0001996.
- ERS-AFAF_LS0001147.
- ERS-CW_LS0000001.
- ERS-CW_LS0000002.
- ERS-CW_LS0000003.
- ERS-CW_LS0000004 - 000025.
- ERS-CW_LS0000026 - 000028.
- ERS-CW_LS0000029 - 000031.
- ERS-CW_LS0000032 - 000037.
- ERS-CW_LS0000038 - 000047.
- ERS-CW_LS0000048 - 000055.
- ERS-CW_LS0000056 - 000064.
- ERS-CW_LS0000065 - 000071.
- ERS-CW_LS0000072.
- ERS-CW_LS0000073 - 000076.
- ERS-CW_LS0000077 - 0000125.
- ERS-CW_LS0000126 - 0000183.
- ERS-CW_LS0000184 - 0000187.
- ERS-CW_LS0000188.
- ERS-CW_LS0000189.
- ERS-CW_LS0000190 - 0000231.
- ERS-CW_LS0000232 - 0000242.
- ERS-CW_LS0000243 - 0000251.
- ERS-CW_LS0000252 - 0000259.
- ERS-CW_LS0000260 - 0000265.
- ERS-CW_LS0000266 - 0000269.
- ERS-CW_LS0000270 - 0000278.
- ERS-CW_LS0000279.
- ERS-CW_LS0000280 - 0000289.
- ERS-CW_LS0000290 - 0000293.
- ERS-CW_LS0000294 - 0000295.
- ERS-CW_LS0000296.
- ERS-CW_LS0000297 - 0000299.
- ERS-CW_LS0000300.
- ERS-CW_LS0000301 - 0000303.
- ERS-CW_LS0000304.
- ERS-CW_LS0000305 - 0000308.
- ERS-CW_LS0000309 - 0000313.
- ERS-CW_LS0000314 - 0000316.
- ERS-CW_LS0000317 - 0000320.
- ERS-CW_LS0000321.
- ERS-CW_LS0000322.
- ERS-CW_LS0000323.
- ERS-CW_LS0000324.
- ERS-CW_LS0000325.
- ERS-CW_LS0000326.
- ERS-CW_LS0000327.
- ERS-CW_LS0000328 - 0000330.
- ERS-CW_LS0000331 - 0000332.

Exhibit 2. Materials Considered

- ERS-CW_LS0000333.
- ERS-CW_LS0000334 - 0000338.
- ERS-CW_LS0000339 - 0000340.
- ERS-CW_LS0000341 - 0000343.
- ERS-CW_LS0000344 - 0000345.
- ERS-CW_LS0000346 - 0000349.
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- ERS-CW_LS0000354 - 0000357.
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- ERS-CW_LS0000359 - 0000368.
- ERS-CW_LS0000369 - 0000375.
- ERS-CW_LS0000376 - 0000378.
- ERS-CW_LS0000379 - 0000383.
- ERS-CW_LS0000384.
- ERS-CW_LS0000385.
- ERS-CW_LS0000386 - 0000387.
- ERS-CW_LS0000388 - 0000392.
- ERS-CW_LS0000393.
- ERS-CW_LS0000394 - 0000395.
- ERS-CW_LS0000396.
- ERS-CW_LS0000397.
- ERS-CW_LS0000398.
- ERS-CW_LS0000399 - 0000419.
- ERS-CW_LS0000420 - 0000428.
- ERS-CW_LS0000429 - 0000433.
- ERS-CW_LS0000434 - 0000437.
- ERS-CW_LS0000438 - 0000440.
- ERS-CW_LS0000441 - 0000444.
- ERS-CW_LS0000445 - 0000448.
- ERS-CW_LS0000449.
- FOMB_ERS_00000001.
- FOMB_ERS_00000002 - 00000047.
- FOMB_ERS_00000048.
- FOMB_ERS_00000049 - 00000094.
- FOMB_ERS_00000095.
- FOMB_ERS_00000096 - 00000141.
- FOMB_ERS_00000142.
- FOMB_ERS_00000143 - 00000188.
- FOMB_ERS_00000189 - 00000190.
- FOMB_ERS_00000191 - 00000236.
- FOMB_ERS_00000237 - 00000238.
- FOMB_ERS_00000239.
- FOMB_ERS_00000285.
- FOMB_ERS_00000286 - 00000458.
- FOMB_ERS_00000459 - 00000460.
- FOMB_ERS_00000461 - 00000558.
- FOMB_ERS_00000559.
- FOMB_ERS_00000560 - 00000628.
- FOMB_ERS_00000629.
- FOMB_ERS_00000630 - 00000645.
- FOMB_ERS_00000646.
- FOMB_ERS_00000647 - 00000654.
- FOMB_ERS_00000655.
- FOMB_ERS_00000656 - 00000712.
- FOMB_ERS_00000713.
- FOMB_ERS_00000714.
- FOMB_ERS_00000715 - 00000760.

Exhibit 2. Materials Considered

- FOMB_ERS_00000761.
- FOMB_ERS_00000762.
- FOMB_ERS_00000763 - 00000876.
- FOMB_ERS_00000877 - 00000899.
- FOMB_ERS_00000900 - 00000932.
- FOMB_ERS_00000933 - 00000949.
- FOMB_ERS_00000950 - 00000953.
- FOMB_ERS_00000954 - 00000999.
- FOMB_ERS_00001000.
- FOMB_ERS_00001001 - 00001003.
- FOMB_ERS_00001004.
- FOMB_ERS_00001005.
- FOMB_ERS_00001006.
- FOMB_ERS_00001007.
- FOMB_ERS_00001008.
- FOMB_ERS_00001009.
- FOMB_ERS_00001010.
- FOMB_ERS_00001011 - 00001015.
- FOMB_ERS_00001016 - 00001030.
- FOMB_ERS_00001031 - 00001084.
- FOMB_ERS_00001086 - 00001219.
- FOMB_ERS_00001220.
- FOMB_ERS_00001221.
- FOMB_ERS_00001222.
- FOMB_ERS_00001223 - 00001238.
- FOMB_ERS_00001239 - 00001263.
- FOMB_ERS_00001264 - 00001289.
- FOMB_ERS_00001290 - 00001315.
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- FOMB_ERS_00001326.
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- FOMB_ERS_00001336.
- FOMB_ERS_00001337 - 00001376.
- FOMB_ERS_00001377 - 00001415.
- FOMB_ERS_00001416.
- FOMB_ERS_00001417 - 00001432.
- FOMB_ERS_00001433 - 00001469.
- FOMB_ERS_00001470 - 00001506.
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- FOMB_ERS_00001526.
- FOMB_ERS_00001527.
- FOMB_ERS_00001528.
- FOMB_ERS_00001529.
- FOMB_ERS_00001530.
- FOMB_ERS_00001531.
- FOMB_ERS_00001532.
- FOMB_ERS_00001533.
- FOMB_ERS_00001534.
- FOMB_ERS_00001535.

Exhibit 2. Materials Considered

- FOMB_ERS_00001536.
- FOMB_ERS_00001537.
- FOMB_ERS_00001538.
- FOMB_ERS_00001539.
- FOMB_ERS_00001540.
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